AUTHOR INDEX

June, 1995

Abadan, Y., 2497
Albar, J. P., 2387
Allison, S. A., 2261
Anderson, L. E., 2218
Andreani, C., 2519
Angiolillo, C. P. J., 2505
Arcangeli, A., 2615
Atwater, I., 2323
Austin, R. H., 2224

Balgi, G., 2251
Berman, H. M., 2454
Beroza, P., 2233
Bertram, R., 2323
Beveridge, D. L., 2454
Bischof, J. C., 2608
Bitensky, M., 2224
Boens, N., 2469
Bos, M. A., 2566, 2573
Bourdieu, L., 2444
Brenner, B., 2404
Brody, J. P., 2224
Bryant, R. G., 2556
Budker, V., 2531
Bukauskas, F. F., 2289
Burton, K., 2429
Busath, D., 2271

Capiod, T., 2601
Carlà, M., 2615
Chalovich, J. M., 2404
Chan, S. I., 2543
Chien, E. Y. T., 2497
Chu, K., 2497
Clerc, S. G., 2333
Coronado, R., 2280
Corrie, J. E. T., 2601
Cuomo, M., 2615

Deriu, A., 2519
De Schryver, F. C., 2469
Desideri, A.. 2519
Di Cola, D., 2519
Donnelly, M., 2218
Du, J-L., 2531

Eaton, G. R., 2531
Eaton, S. S., 2531
Elfgang, C., 2289
El-Hayek, R., 2280
Eng, C. D., 2497
Evans, E., 2580
Ezzell, R. M., 2608

Feeney, J., 2601
Feher, G., 2233
Filabozzi, A., 2519
Fredkin, D. R., 2233

Gallay, J., 2469
Gasset, M., 2387
Gavilanes, J. G., 2387
Gawrisch, K., 2396
Gilat, T., 2342
Guo, W., 2376

Haendler, B., 2280
Hamilton, J. A., 2376
Han, Y., 2224
Hauser, H., 2342
He, K., 2361
Hennink, E. J., 2588
Holmes, W. H., 2608
Holte, L. L., 2396
Huang, H. W., 2361
Huxley, A. F., 2429

Ikebe, M., 2419

Katayama, E., 2419
Keizer, J., 2216
Kinnally, K. W., 2299
Kinose, F., 2444
Kleijn, J. M., 2566, 2573
Koch, M. H. J., 2342
Koynova, R., 2370
Kraft, T., 2404
Krätzschmar, J., 2280

Lacadena, J., 2387
Lavergne, J., 2474
Leckband, D., 2215
Leckband, D. E., 2251
Lee, R. C., 2608
Li, D., 2218
Libchaber, A., 2444
Lipka, G., 2342
Liu, Z., 2493
Lohret, T. A., 2299
Ludtke, S. J., 2361

Mancheño, J. M., 2387
Martin, B. M., 2280
Martin, F., 2323
Martínez del Pozo, A., 2387
Mears, D., 2323
Menzinger, F., 2519
Merkel, R., 2580
Meuwis, K., 2469
Mochca-Morales, J., 2280
Morrisette, J., 2280
Morse, P. D., II, 2350
Moss, R. L., 2280
Muslin, E. H., 2218
Musser, S. M., 2543

Neunlist, M., 2310
Nienhaus, G. U., 2497
Nitsche, J. M., 2251

Ogden, D. C., 2601
Okamura, M. Y., 2233
Olivotto, M., 2615
Oñaderra, M., 2387
Ott, A., 2444

Padanilam, J., 2608
Parak, F. G., 2524
Patel, J. R., 2280
Peter, S. A., 2396
Possani, L. D., 2280
Prusakov, V. E., 2524

Qin, H., 2493
Quinn, P. J., 2370

Ravishanker, G., 2454
Ritchie, K., 2580

Schiffer, M., 2218
Schleuning, W-D., 2280
Schulthess, G., 2342
Seiter, M., 2531
Seoh, S-A., 2271
Sherman, A., 2323
Sinnwell, T. M., 2396
Sligar, S. G., 2497
Smirnov, A. I., 2350
Smirnova, T. I., 2350
Smolen, P., 2323
Sömjen, G. J., 2342
Song, L., 2588
Soria, B., 2323
Stevens, F. J., 2218
Steyer, J., 2524
Sui, S-f., 2493

Tanke, H. J., 2588
Tenchov, B. G., 2370
Thompson, T. E., 2333
Todinova, S., 2370
Tompkins, R. G., 2608
Toner, M., 2608
Tran, V. T., 2261
Trentham, D. R., 2601
Trissl, H-W., 2474
Tung, L., 2310

Vanderkooi, J. M., 2505
Vincent, M., 2469

Wachtel, E., 2342
Weingart, R., 2289
Willecke, K., 2289
Winkelmann, D. A., 2444
Wootten, J. F., 2601
Wu, Y., 2361

Yarmush, M. L., 2608
Young, I. T., 2588
Young, M. A., 2454
Yu, L. C., 2404

Zhang, H., 2556

AUTHOR INDEX

A

Abadan, Y., Chien, E. Y. T., Chu, K., Eng, C. D., Nienhaus, G. U., and Sligar, S. G. Ligand binding to heme proteins. V. Light-induced relaxation in proximal mutants L89I and H97F of carbonmonoxymyoglobin, 2497
Abney, J. R. *See* Zimet, Thevenin, Verkman, Shohet, and Abney.
Acuña, A. U. *See* Mateo, Acuña, and Brochon.
Adachi, T., Takahashi, H., Ohki, K., and Hatta, I. Interdigitated structure of phospholipid-alcohol systems studied by x-Ray diffraction, 1850
Adelstein, R. S. *See* Itoh and Adelstein.
——— *See* Kelley and Adelstein.
Agmon, N. and Edelstein, A. L. Geometric and many-particle aspects of transmitter binding, 815
Åhrling, K. A. and Pace, R. J. Simulation of the S_2 state multiline electron paramagnetic resonance signal of photosystem II: A multifrequency approach, 2081
Albar, J. P. *See* Fernandez-Ballester, Gavilanes, Albar, Criado, Ferragut, and Gonzalez-Ros.
——— *See* Mancheño, Gasset, Albar, Lacadena, Martínez del Pozo, Oñaderra, and Gavilanes.
Alberty, R. A. Biophysical Thermodynamics of Intracellular Processes: Molecular Machines of the Living Cell. L. A. Blumenfeld and A. N. Tikhonov (book review), 1634
Albrecht, R. M. *See* Eppell, Simmons, Albrecht, and Marchant.
Albuquerque, E. X. *See* Castro and Albuquerque.
Allen, T. S. C., Sabido-David, C., Ling, N., Irving, M., and Goldman, Y. E. Transients of fluorescence polarization in skeletal muscle fibers labeled with rhodamine on the regulatory light chain, 81s
Allison, S. A. and Tran, V. T. Modeling the electrophoresis of rigid polyions: application to lysozyme, 2261
Allison, S. A. *See* Gebe, Allison, Clendenning, and Schurr.
Alpert, N. R. *See* Peterson, Alpert, VanBuren, Harris, and Warshaw.
Altendorf, K. *See* Bartl, Deckers-Hebestreit, Altendorf, and Zundel.
Ameloot, M. *See* van den Bergh, Boens, De Schryver, Ameloot, Steels, Gallay, Vincent, and Kowalczyk.
Amemiya, Y. *See* Iwamoto, Kobayashi, Amemiya, and Wakabayashi.
Anazawa, T. *See* Yasuda, Anazawa, and Ishiwata.
Anderson, A. B. and Robertson, C. R. Absorption spectra indicate conformational alteration of myoglobin adsorbed on polydimethylsiloxane, 2091
Anderson, C. F. *See* Guttman, Anderson, and Record.
——— *See* Olmsted, Bond, Anderson, and Record.
——— *See* Record and Anderson.
——— *See* Stein, Bond, Capp, Anderson, and Record.
Anderson, K. *See* Gelles, Berliner, Young, Mahtani, Perez-Ramirez, and Anderson.
Anderson, L. E. *See* Muslin, Li, Stevens, Donnelly, Schiffer, and Anderson.
Anderson, W. H. *See* Brown, Anderson, and Kulkarni.
Andreani, C., Filabozzi, A., Menzinger, F., Desideri, A., Deriu, A., and Di Cola, D. Dynamics of hydrogen atoms in superoxide dismutase by quasielastic neutron scattering, 2519
Angiolillo, C. P. J. and Vanderkooi, J. M. Electron paramagnetic resonance of the excited triplet state of metal-free and metal substituted cytochrome, 2505
Anson, M., Drummond, D. R., Geeves, M. A., Hennessey, E. S., Ritchie, M. D., and Sparrow, J. C. Actomyosin kinetics and in vitro motility of wild-type *Drosophila* actin and the effects of two mutations in the *Act88F* gene, 1991
Antosiewicz, J., Gilson, M. K., Lee, I. H., and McCammon, J. A. Acetylcholinesterase: Diffusional encounter rate constants for dumbbell models of ligand, 62
Antosiewicz, J. and Porschke, D. Electrostatics of hemoglobins from measurements of the electric dichroism and computer simulations, 655
Aranda, F. J. *See* Sánchez-Migallón, Aranda, and Gómez-Fernández.
Arata, T. Two G-Actin-Binding Sites of Myosin Head in the Absence and Presence of ATP, 325s
Arcangeli, A. *See* Carlà, Cuomo, Arcangeli, and Olivotto.
Armstrong, C. M. *See* Gomez-Lagunas and Armstrong.
Arvidson, G. *See* Orädd, Lindblom, Arvidson, and Gunnarsson.
Astumian, R. D. and Bier, M. Mechanochemical coupling of molecular motors to ATP hydrolysis, 219s
Aszalos, A. *See* Szabó, Weaver, Pine, Rao, and Aszalos.
Atkinson, D. *See* Spin and Atkinson.
Atluri, P. P. *See* Regehr and Atluri.
Atwater, I. *See* Bertram, Smolen, Sherman, Mears, Atwater, Martin, and Soria.
Auger, M. *See* Le Guernevé and Auger.
Austin, R. H. *See* Brody, Han, Austin, and Bitensky.

B

Backx, P. H. *See* Tomaselli, Chiamvimonvat, Nuss, Balser, Pérez-García, Kluge, Orias, Backx, and Marban.
Baeuerlein, E. *See* Stahlberg, Schuster, Bauer, Baeuerlein, Zhao, Reese, and Khan.
Bakene, E. *See* Tarahovsky, Khusainov, Daugelavichus, and Bakene.
Baker, A. *See* Zhao, Pate, Baker, and Cooke.
Balgi, G., Leckband, D. E., and Nitsche, J. M. Transport effects on the kinetics of protein-surface binding, 2251
Balser, J. R. *See* Tomaselli, Chiamvimonvat, Nuss, Balser, Pérez-García, Kluge, Orias, Backx, and Marban.
Bangham, A. D. "Surface tensions" in the lung (letter), 1631
Baradet, T. C., Haselgrove, J. C., and Weisel, J. W. 3-D reconstruction of fibrin clot networks from stereoscopic IVEM images and analysis of branching, 1551
Barkalow, K. *See* Hamasaki, Simon, Barkalow, and Satir.
——— *See* Satir, Barkalow, and Hamasaki.
Barman, T. *See* Lionne, Hermann, Travers, and Barman.
Barnett, V. A. Mechanical effects of N-phenylmaleimide labeling of myosin in skinned rabbit psoas fibers, 343s
Bar-Shimon, M. *See* Tarasiuk, Bar-Shimon, Gheber, Korngreen, Grossman, and Priel.
Bartels, K. *See* Czeslik, Winter, Rapp, and Bartels.
Bartl, F., Deckers-Hebestreit, G., Altendorf, K., and Zundel, G. The F_0 complex of the ATP synthase of *Escherichia coli* contains a proton pathway with large proton polarizability cuased by collective proton fluctuation., 104
Bar-Yam, Y. *See* Ostrovský and Bar-Yam.
Baskin, R. J. *See* Hall, Cole, Yeh, Scholey, and Baskin.
Bassani, J. W. M., Bassani, R. A., and Bers, D. M. A novel method for calibration of indo-1 in intact rabbit cardiac myocytes, 1453
Bassani, R. A. and Bers, D. M. Rate of diastolic Ca release from the sarcoplasmic reticulum of intact rabbit and rat ventricular myocytes, 2015
Bassani, R. A. *See* Bassani, Bassani, and Bers.
Bauer, M. *See* Stahlberg, Schuster, Bauer, Baeuerlein, Zhao, Reese, and Khan.
Baumeister, W. *See* Dierksen, Typke, Hegerl, Walz, Sackmann, and Baumeister.

Bayerl, T. M. *See* König, Bayerl, Coddens, Richter, and Sackmann.
Begenisich, T. *See* Spires and Begenisich.
Bell, M. G., Matta, J. J., Thomas, D. D., and Goldman, Y. E. Changes in Cross-Bridge Kinetics Induced by SH-1 Modification in Rabbit Psoas Fibers, 360s
ben-Avraham, D. and Tirion, M. M. Dynamic and elastic properties of F-actin: A normal-modes analysis, 1231
ben-Avraham, D. *See* Tirion, ben-Avraham, Lorenz, and Holmes.
Benevides, J. M. *See* Thomas, Benevides, Overman, Ueda, Ushizawa, Saitoh, and Tsubi.
Benndorf, K. *See* Böhle and Benndorf
Bennett, M. R., Farnell, L., Gibson, W. G., and Karunanithi, S. Quantal transmission at purinergic junctions: Stochastic interaction between ATP and its receptors, 925
Berg, H. C. *See* Woodward, Tyson, Myerscough, Murray, Budrene, and Berg.
——— Torque Generation by the Flagellar Rotary Motor, 163s
Berger, C. L., Craik, J. S., Trentham, D. R., Corrie, J. E. T., and Goldman, Y. E. Fluorescence polarization from isomers of tetramethylrhodamine at SH-1 in rabbit psoas muscle fibers, 78s
Berk, D. A. *See* Johnson, Berk, Jain, and Deen.
Berland, K. M., So, P. T. C., and Gratton, E. Two-photon fluorescence correlation spectroscopy: Method and application to the intracellular environment, 694
Berliner, E. *See* Gelles, Berliner, Young, Mahtani, Perez-Ramirez, and Anderson.
Berman, H. M. *See* Young, Ravishanker, Beveridge, and Berman.
Berns, M. W. *See* Liu, Cheng, Sonek, Berns, Chapman, and Tromberg.
Beroza, P., Fredkin, D. R., Okamura, M. Y., and Feher, G. Electrostatic calculations of amino acid titration and electron transfer, $Q_A^- Q_B \rightarrow Q_A Q_B^-$ in the reaction center, 2233
Bers, D. M. *See* Bassani, Bassani, and Bers.
——— *See* Bassani and Bers.
Berthoud, V. M. *See* Ebihara, Berthoud, and Beyer.
Bertram, R., Smolen, P., Sherman, A., Mears, D., Atwater, I., Martin, F., and Soria, B. A role for calcium release-activated current (CRAC) in cholinergic modulation of electrical activity in pancreatic β-cells, 2323
Beveridge, D. L. *See* Young, Ravishanker, Beveridge, and Berman.
Beyer, E. C. *See* Ebihara, Berthoud, and Beyer.
Beyer, K. *See* Otten, Löbbecke, and Beyer.
Bezanilla, M. *See* Hansma, Laney, Bezanilla, Sinsheimer, and Hansma.
Biagio, P. L. S. *See* Bulone and Biagio.
Bier, M. *See* Astumian and Bier.
Bierer, B. E. *See* Liu, Hahn, Bierer, and Golan.
Birke, S. S. and Diem, M. Conformational studies of the smallest structural motifs of DNA detectable via vibrational circular dichroism: Cytidylyl-(3′-5′)-guanosine and guanylyl-(3′-5′)--cytidine, 1045
Bischof, J. C., Padanilam, J., Holmes, W. H., Ezzell, R. M., Lee, R. C., Tompkins, R. G., Yarmush, M. L., and Toner, M. Dynamics of cell membrane permeability changes at supraphysiological temperatures, 2608
Bitensky, M. *See* Brody, Han, Austin, and Bitensky.
Bittner, G. D. *See* Krause, Magarshak, Fishman, and Bittner.
Block, B. A. *See* O'Brien, Valdivia, and Block.
Block, S. M. and Svoboda, K. Analysis of High Resolution Recordings of Motor Movement, 230s
Block, S. M. *See* Svoboda, Mitra, and Block.
Blondelle, S. E., Ostresh, J. M., Houghten, R. A., and Pérez-Payá, E. Induced conformational states of amphipathic peptides in aqueous/lipid environments, 351
Blume, A. *See* Jansen and Blume.
Boens, N. *See* Meuwis, Boens, De Schryver, Gallay, and Vincent.
——— *See* van den Bergh, Boens, De Schryver, Ameloot, Steels, Gallay, Vincent, and Kowalczyk.
Böhle, T. and Benndorf, K. Multi-modal action of single Na^+channels in myocardial mouse cells, 121
Böldt, G. *See* Möller, Schabert, Böldt, and Engel.
Bonafé, N. and Chaussepied, P. A single myosin head can be cross-linked to the N termini of two adjacent actin monomers, 35s
Bond, J. P. *See* Olmsted, Bond, Anderson, and Record.
——— *See* Stein, Bond, Capp, Anderson, and Record.
Bordas, J., Lowy, J., Svensson, A., Harries, J. E., Diakun, G. P., Gandy, J., Miles, C., Mant, G. R., and Towns-Andrews, E. X-ray evidence that in contracting live frog muscles there exist two distinct populations of myosin heads, 99s
Bos, M. A. and Kleijn, J. M. Determination of the orientation distribution of adsorbed fluorophores using TIRF. I. Theory, 2566
——— Determination of the orientation distribution of adsorbed fluorophores using TIRF. II. Measurements on porphyrin and cytochrome *c*, 2573
Bottinelli, R. and Reggiani, C. Essential myosin light chain isoforms and energy transduction in skeletal muscle fibers, 227s
Bourdieu, L. *See* Winkelmann, Bourdieu, Kinose, and Libchaber.
——— *See* Winkelmann, Bourdieu, Ott, Kinose, and Libchaber.
Boxer, S. G. *See* Pierce and Boxer.
Braslavsky, S. E. *See* van Brederode, Gensch, Hoff, Hellingwerf, and Braslavsky.
Breed, J. *See* Sansom, Son, Sankararamakrishnan, Kerr, and Breed.
Brenner, B., Chalovich, J. M., and Yu, L. C. Distinct molecular processes associated with isometric force generation and rapid tension recovery after quick release, 106s
Brenner, B. *See* Kraft, Chalovich, Yu, and Brenner.
——— *See* Kraft, Messerli, Rutishauser, Wallimann, Perriard, Chalovich, and Brenner.
Brezesinski, G. *See* Haas, Brezesinski, and Möhwald.
Brochon, J.-C. *See* Mateo, Acuña, and Brochon.
Brody, J. P., Han, Y., Austin, R. H., and Bitensky, M. Deformation and flow of red blood cells in a synthetic lattice: Evidence for an active cytoskeleton, 2224
Brown, L. S. *See* Cao, Brown, Sasaki, Maeda, Needleman, and Lanyi.
Brown, R. E., Anderson, W. H., and Kulkarni, V. S. Marcoripple phase formation in bilayers composed of galactosylceramide and phosphatidylcholine, 1396
Brune, M. *See* Ferenczi, He, Chillingworth, Brune, Corrie, Trentham, and Webb.
——— *See* Gilbert, Webb, Brune, and Johnson.
Bryant, R. G. *See* Zhang and Bryant.
——— *See* Zhang and Bryant.
Buchanan, J. T. *See* Moore, Buchanan, and Murphey.
Budker, V., Du, J.-L., Seiter, M., Eaton, G. R., and Eaton, S. S. Electron-electron spin-spin interaction in spin-labeled low-spin methemoglobin, 2531
Budrene, E. O. *See* Woodward, Tyson, Myerscough, Murray, Budrene, and Berg.
Buehler, L. K., Stauffer, K. A., Gilula, N. B., and Kumar, N. M. Single channel behavior of recombinant β_2 gap junction connexon reconstituted into planar lipid bilayers, 1767
Buettner, H. M. *See* Riley, Buettner, Muzzio, and Reyes.
Bukauskas, F. F., Elfgang, C., Willecke, K., and Weingart, R. Biophysical properties of gap junction channels formed by mouse connexin 40 in induced pairs of transfected human HeLa cells, 2289
Bulone, D. and Biagio, P. L. S. Mesoscopic gel at low agarose concentration in water: A dynamic light scattering study, 1569
Burnashev, N. *See* Villarroel, Burnashev, and Sakmann.
Burns, J. E. *See* Molloy, Burns, Sparrow, Tregear, Kendrick-Jones, and White.
Burton, K. Myosin and actin interactions during rapid filament sliding, 333s

——— **and Huxley, A. F.** Identification of source of oscillations in apparent sarcomere length measured by laser diffraction, 2429
Busath, D. *See* Seoh and Busath.
Bussell, S. J., Koch, D. L., and Hammer, D. A. Effect of hydrodynamic interactions on the diffusion of integral membrane proteins: Diffusion in plasma membranes, 1836
——— Effect of hydrodynamic interactions on the diffusion of integral membrane proteins: Tracer diffusion in organelle and reconstituted membranes, 1828

C

Cameron, I. L. *See* Keener, Fullerton, Cameron, and Xiong.
Cao, Y., Brown, L. S., Sasaki, J., Maeda, A., Needleman, R., and Lanyi, J. K. Relationship of proton release at the extracellular surface to deprotonation of the Schiff base in the bacteriorhodopsin photocycle, 1518
Capiod, T. *See* Wootten, Corrie, Capiod, Feeney, Trentham, and Ogden.
Capp, M. W. *See* Stein, Bond, Capp, Anderson, and Record.
Carlà, M., Cuomo, M., Arcangeli, A., and Olivotto, M. Adsorption properties of polar/apolar inducers at a charged interface and their relevance to leukemia cell differentiation, 2615
Castro, N. G. and Albuquerque, E. X. α-Bungarotoxin-sensitive hippocampal nicotinic receptor channel has a high calcium permeability, 516
Celio, Marco R. In Memoriam: Albrecht L. Weisenhorn 1961–1993, 1671
Chacko, S., Sosinski, J., and Wang, Z. Studies on the regulation of smooth-muscle myosin I by full length-smooth-muscle caldesmon and caldesmon mutants, 342s
Chae, K. S. and Lenhoff, A. M. Computation of the electrophoretic mobility of proteins, 1120
Chalovich, J. M. *See* Brenner, Chalovich, and Yu.
——— *See* Kraft, Chalovich, Yu, and Brenner.
——— *See* Kraft, Messerli, Rutishauser, Wallimann, Perriard, Chalovich, and Brenner.
Chan, S. I. *See* Musser and Chan.
Chapman, C. F. *See* Liu, Cheng, Sonek, Berns, Chapman, and Tromberg.
Chase, P. B., Martyn, D. A., Kushmerick, M. J., and Gordon, A. M. Phase 2 tension transients, unlike V_{US} and k_{TR}, are faster at submaximal calcium activation in skinned rabbit psoas muscle fibers, 339s
Chase, P. B. *See* Martyn and Chase.
Chaussepied, P. *See* Bonafé and Chaussepied.
Chazotte, B. *See* Gordon, Chazotte, Wang, and Herman.
Che, A. and Cherry, R. J. Loss of rotational mobility of band 3 proteins in human erythrocyte membranes induced by antibodies to glycophorin A, 1881
Che, D. *See* Shaprio, Goldbeck, Che, Esquerra, Paquette, and Kliger.
Chen, D. P. *See* Elber, Chen, Rojewska, and Eisenberg.
Chen, P. *See* Chisholm, Chen, Chen, Ho, and Ostrow.
Chen, S.-Y. S. *See* Tang, Van Der Meer, and Chen.
Chen, T.-L. L. *See* Chisholm, Chen, Chen, Ho, and Ostrow.
Chen, Y.-H. and Lowe, J. W. DNA minor groove binding of cross-linked lexitropsins: experimental conditions required to observe the covalently linked WPPW (groove wall-peptide-peptide-groove wall) motif, 2040
Cheng, D. K. *See* Liu, Cheng, Sonek, Berns, Chapman, and Tromberg.
Cherbavaz, D. B. TWO-modification of BTX-activated Na channels alters functionally important protein residues, 1337
Cherry, R. J. *See* Che and Cherry.
Cheung, P. *See* Miller, Cheung, White, and Reister.
Chiamvimonvat, N. *See* Tomaselli, Chiamvimonvat, Nuss, Balser, Pérez-García, Kluge, Orias, Backx, and Marban.
Chien, E. Y. T. *See* Abadan, Chien, Chu, Eng, Nienhaus, and Sligar.
Chik, J. K. *See* Rozicky, Chik, Lindberg, and Schutt.
——— *See* Schutt, Rozycki, Chik, and Lindberg.
Chillingworth, R. K. *See* Ferenczi, He, Chillingworth, Brune, Corrie, Trentham, and Webb.
Chisholm, R. L., Chen, P., Chen, T.-L. L., Ho, G., and Ostrow, B. D. The contributions of light chains to myosin function, 223s
Chiu, W. *See* Schmid, Jakana, Matsudaira, and Chiu.
Chizmadzhev, Y. A., Zarnitsin, V. G., Weaver, J. C., and Potts, R. O. Mechanism of electroinduced ionic species transport through a multilamellar lipid system, 749
Chong, P. L.-G. *See* Zeng and Chong.
Chu, K. *See* Abadan, Chien, Chu, Eng, Nienhaus, and Sligar.
Ciolkowski, E. L. *See* Wightman, Schroeder, Finnegan, Ciolkowski, and Pihel.
Clarke, R. J., Zouni, A., and Holzwarth, J. F. Voltage sensitivity of the fluorescent probe RH421 in a model membrane system, 1406
Clendenning, J. B. *See* Gebe, Allison, Clendenning, and Schurr.
Clerc, S. G. and Thompson, T. E. Permeability of dimyristoyl phosphatidylcholine/dipalmitoyl phosphatidylcholine bilayer membranes with coexisting gel and liquid-crystalline phases, 2333
Coddens, G. *See* König, Bayerl, Coddens, Richter, and Sackmann.
Cole, D. G. and Scholey, J. M. Purification of kinesin-related protein complexes from eggs and embryos, 158s
Cole, D. G. *See* Hall, Cole, Yeh, Scholey, and Baskin.
Colomo, F., Piroddi, N., Poggesi, C., and Tesi, C. Myofibrillar contribution to passive tension in striated muscle, 344s
Conibear, P. B. *See* Geeves and Conibear.
Cooke, R. *See* Fajer, Ostap, Thomas, Naber, Cooke, and Fajer.
——— *See* Franks-Skiba and Cooke.
——— *See* Naber and Cooke.
——— *See* Wilson, Shull, and Cooke.
——— *See* Zhao, Gollub, and Cooke.
——— *See* Zhao, Naber, and Cooke.
——— *See* Zhao, Pate, Baker, and Cooke.
Coorssen, J. R. and Rand, R. P. Structural effects of neutral lipids on divalent cation-induced interactions of phosphatidylserine-containing bilayers, 1009
Coppin, C. M., Finer, J. T., Spudich, J. A., and Vale, R. D. Measurement of the isometric force exerted by a single kinesin molecule, 242s
Corbett, J. D. *See* Prausnitz, Corbett, Gimm, Golan, Langer, and Weaver.
Coronado, R. *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.
Corrie, J. E. T. *See* Berger, Craik, Trentham, Corrie, and Goldman.
——— *See* Ferenczi, He, Chillingworth, Brune, Corrie, Trentham, and Webb.
——— *See* Wootten, Corrie, Capiod, Feeney, Trentham, and Ogden.
Craik, J. S. *See* Berger, Craik, Trentham, Corrie, and Goldman.
Cremo, C. R. *See* Facemyer, Sellers, and Cremo.
——— *See* Olney and Cremo.
Criado, M. *See* Fernandez-Ballester, Gavilanes, Albar, Criado, Ferragut, and Gonzalez-Ros.
Cummings, P. T. *See* Duffy, Cummings, and Ford.
Cuomo, M. *See* Carlà, Cuomo, Arcangeli, and Olivotto.
Czeslik, C., Winter, R., Rapp, G., and Bartels, K. Temperature- and pressure-dependent phase behavior of the monoacylglycerides monoolein and monoelaidin, 1423

D

Dai, J. and Sheetz, M. P. Mechanical properties of neuronal growth cone membranes studied by tether formation with laser optical tweezers, 988

Dani, J. A. *See* Rogers and Dani.
Daragan, V. A. *See* Mikhailov, Daragan, and Mayo.
Daugelavichus, R. *See* Tarahovsky, Khusainov, Daugelavichus, and Bakene.
Davis, J. S. and Rodgers, M. E. Force generation and temperature-jump and length-jump tension transients in muscle fibers, 2032
de Beer, E. L., Sontrop, A. A. T. A., Kellermayer, M. S. Z., Galambos, C., and Pollack, G. H. Is Actin-filament velocity in the in vitro motility assay periodic? 70s
de Paula, J. C., Robblee, J. H., and Pasternack, R. F. Aggregation of chlorophyll *a* probed by resonance light scattering spectroscopy, 335
De Schryver, F. C. *See* Meuwis, Boens, De Schryver, Gallay, and Vincent.
——— *See* van den Bergh, Boens, De Schryver, Ameloot, Steels, Gallay, Vincent, and Kowalczyk.
Deckers-Hebestreit, G. *See* Bartl, Deckers-Hebestreit, Altendorf, and Zundel
Deen, W. M. *See* Johnson, Berk, Jain, and Deen.
DeFelice, L. J. Handbook of Membrane Channels. Camillo Peracchia, Editor (book review), 2207
Dekker, J. P. *See* Groot, Peterman, van Stokkum, Dekker, and van Grondelle.
Dembo, M. *See* Goldstein and Dembo.
Demidov, A. A. and Mimuro, M. Deconvolution of C-phycocyanin B-84 and B-155 chromophore absorption and fluorescence spectra of *Cyanobacterium mastigocladus laminosus.*, 1500
Dennis, E. A. *See* Reynolds, Kempner, Hughes, and Dennis.
Deprez, E. *See* Di Primo, Deprez, Hoa, and Douzou.
Deriu, A. *See* Andreani, Filabozzi, Menzinger, Desideri, Deriu, and Di Cola.
Desideri, A. *See* Andreani, Filabozzi, Menzinger, Desideri, Deriu, and Di Cola.
Deubzer, B. *See* Schindl, Wallraff, Deubzer, Witke, Gerisch, and Sackmann.
Deutsch, C. *See* Tu, Santarelli, and Deutsch.
Di Cera, E. Preferential interactions: It's as simple as 1, 2, 3, 727
Di Cola, D. *See* Andreani, Filabozzi, Menzinger, Desideri, Deriu, and Di Cola.
Di Primo, C., Deprez, E., Hoa, G. H. B., and Douzou, P. Antagonistic effects of hydrostatic pressure and osmotic pressure on cytochrome $P\text{-}450_{cam}$ spin transition, 2056
Diakun, G. P. *See* Bordas, Lowy, Svensson, Harries, Diakun, Gandy, Miles, Mant, and Towns-Andrews.
Diem, M. *See* Birke and Diem.
Dierksen, K., Typke, D., Hegerl, R., Walz, J., Sackmann, E., and Baumeister, W. 3D structure of lipid vesicles embedded in vitreous ice and investigated by automated electron tomography, 1416
Diffee, G. M., Greaser, M. L., Reinach, F. C., and Moss, R. L. Effects of a non-divalent cation binding mutant of myosin regulatory light chain on tension generation in skinned skeletal muscle fibers, 1443
Dillman, J. F., III and Pfister, K. K. Differential phosphorylation in vivo of cytoplasmic dynein in anterograde and whole cell compartments, 226s
d'Mello, M. J. *See* Kozack, d'Mello, and Subramaniam.
Dobbie, I. *See* Linari, Dobbie, Vanzi, Török, Irving, Piazzesi, and Lombardi.
——— *See* Piazzesi, Lombardi, Ferenczi, Thirlwell, Dobbie, and Irving.
Donath, E. *See* Egger and Donath.
Donnelly, M. *See* Muslin, Li, Stevens, Donnelly, Schiffer, and Anderson.
Donoso, P., Prieto, H., and Hidalgo, C. Luminal calcium regulates calcium release in triads isolated from frog and rabbit skeletal muscle, 507
Dorman, V. *See* Sancho, Partenskii, Dorman, and Jordan.
Douliez, J.-P., Léonard, A., and Dufourc, E. J. Restatement of order parameters in biomembranes: Calculation of C-C bond order parameters from C-D quadrupolar splittings, 1727
Douzou, P. *See* Di Primo, Deprez, Hoa, and Douzou.
Dreizen, P., Ghodke, U., and Shi, J. An actomyosin cross-bridge model based on quantal steps in weak cross-bridge state, 351s
Dreizen, P. *See* Ghodke and Dreizen.
——— *See* Shi and Dreizen
Drummond, D. R. *See* Anson, Drummond, Geeves, Hennessey, Ritchie, and Sparrow.
Du, J.-L. *See* Budker, Du, Seiter, Eaton, and Eaton.
Du, P. and Loew, G. H. Theoretical study of model compound I complexes of horseradish peroxidase and catalase, 69
Duffy, K. J., Cummings, P. T., and Ford, R. M. Random walk calculations for bacterial migration in porous media, 800
Dufourc, E. J. *See* Douliez, Léonard, and Dufourc.
——— *See* Pott and Dufourc.
Duke, T., Holy, T., and Leibler, S. A statistical mechanical analysis of "gliding assays" for motor proteins, 366s
Duke, T. and Leibler, S. What do the force-velocity curves of kinesin tell us about its functioning? 366s

E

Eaton, G. R. *See* Budker, Du, Seiter, Eaton, and Eaton.
Eaton, S. S. *See* Budker, Du, Seiter, Eaton, and Eaton.
Ebihara, L., Berthoud, V. M., and Beyer, E. C. Distinct behavior of connexin56 and connexin46 gap junctional channels can be predicted from the behavior of their hemi-gap junctional channels, 1796
Edelstein, A. L. *See* Agmon and Edelstein.
Eden, D. and Highsmith, S. Myosin cross-bridge elasticity, 372s
Eden, D., Luu, B. Q., Zapata, D. J., Sablin, E. P., and Kull, F. J. Solution structure of two molecular domains: Nonclaret disjunctional and kinesin, 59s
Egger, M. and Donath, E. Electrorotation measurements of diamide-induced platelet activation changes, 364
Eisenberg, M. *See* Peitzsch, Eisenberg, Sharp, and McLaughlin.
Eisenberg, R. *See* Elber, Chen, Rojewska, and Eisenberg.
Elber, R., Chen, D. P., Rojewska, D., and Eisenberg, R. Sodium in gramicidin: an example of a permion, 906
Elfgang, C. *See* Bukauskas, Elfgang, Willecke, and Weingart.
El-Hayek, R. *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.
Elliott, G. F. and Worthington, C. R. Electrical forces in muscle contraction, 327s
Endow, S. A. Determinants of motor polarity in the kinesin proteins, 271s
——— *See* Moore and Endow.
Eng, C. D. *See* Abadan, Chien, Chu, Eng, Nienhaus, and Sligar.
Engel, A. *See* Möller, Schabert, Böldt, and Engel.
Engel, J., Sowerby, A. J., Finch, S. A. E., Fechner, M., and Stier, A. Temperature dependence of Ca^{2+} wave properties in cardiomyocytes: Implications for the mechanism of autocatalytic Ca^{2+} release in wave propagation, 40
Eppell, S. J., Simmons, S. R., Albrecht, R. M., and Marchant, R. E. Cell-surface receptors and proteins on platelet membranes imaged by scanning force microscopy using immunogold contrast enhancement, 671
Eriksson, M. A. L., Härd, T., and Nilsson, L. Molecular dynamics simulations of the glucocorticoid receptor DNA-binding domain in complex with DNA and free in solution, 402
Espinosa, M. A. *See* Ortega, Smith, and Espinosa.
Esquerra, R. M. *See* Shaprio, Goldbeck, Che, Esquerra, Paquette, and Kliger.

Evans, E., Ritchie, K., and Merkel, R. Sensitive force technique to probe molecular adhesion and structural linkages at biological interfaces, 2580
Ezzell, R. M. *See* Bischof, Padanilam, Holmes, Ezzell, Lee, Tompkins, Yarmush, and Toner.
——— *See* Thorpe, Toner, Ezzell, Tompkins, and Yarmush.

F

Facemyer, K. C., Sellers, J. R., and Cremo, C. R. Two heads are required for phosphorylation-dependent regulation of smooth muscle myosin, 228s
Fajer, E. A., Ostap, E. M., Thomas, D. D., Naber, N., Cooke, R., and Fajer, P. Orientation and dynamics of myosin heads in ATP$\gamma\Sigma$ and Ca^{2+}, 322s
Fajer, E. A. *See* Raucher, Fajer, Sar, Hideg, Zhao, Kawai, and Fajer.
Fajer, P. G., Szczesna, D., and Li, H.-C. EPR studies of signal transduction in muscle contraction, 336s
Fajer, P. G. *See* Raucher, Fajer, Sar, Hideg, Zhao, Kawai, and Fajer.
——— *See* Fajer, Ostap, Thomas, Naber, Cooke, and Fajer.
Fan, X. *See* Váró, Zimányi, Fan, Sun, Needleman, and Lanyi.
Farinas, J., Simanek, V., and Verkman, A. S. Cell volume measured by total internal reflection microfluorimetry: Application to water and solute transport in cells transfected with water channel homologs, 1613
Farnell, L. *See* Bennett, Farnell, Gibson, and Karunanithi.
Fechner, M. *See* Engel, Sowerby, Finch, Fechner, and Stier.
Feeney, J. *See* Wootten, Corrie, Capiod, Feeney, Trentham, and Ogden.
Feher, G. *See* Beroza, Fredkin, Okamura, and Feher.
Ferenczi, M. A., He, Z.-H., Chillingworth, R. K., Brune, M., Corrie, J. E. T., Trentham, D. R., and Webb, M. R. A new method for the time-resolved measurement of phosphate release in permeabilized muscle fibers, 191s
Ferenczi, M. A. *See* Piazzesi, Lombardi, Ferenczi, Thirlwell, Dobbie, and Irving.
Fernandez-Ballester, G., Gavilanes, F., Albar, J. P., Criado, M., Ferragut, J. A., and Gonzalez-Ros, J. M. Adoption of β structure by the inactivating "ball" peptide of the *Shaker* B potassium channel, 858
Ferragut, J. A. *See* Fernandez-Ballester, Gavilanes, Albar, Criado, Ferragut, and Gonzalez-Ros.
Fetler, B. K., Simplaceanu, V., and Ho, C. ^{1}H-NMR investigation of the oxygenation of hemoglobin in intact human red blood cells, 681
Filabozzi, A. *See* Andreani, Filabozzi, Menzinger, Desideri, Deriu, and Di Cola.
Finch, S. A. E. *See* Engel, Sowerby, Finch, Fechner, and Stier.
Finer, J. T., Mehta, A. D., and Spudich, J. A. Characterization of single actin-myosin interactions, 291s
Finer, J. T. *See* Coppin, Finer, Spudich, and Vale.
Finnegan, J. M. *See* Wightman, Schroeder, Finnegan, Ciolkowski, and Pihel.
Finzi, L. *See* Gelles, Yin, Finzi, Wong, and Landick.
Fisher, A. J., Smith, C. A., Thoden, J., Smith, R., Sutoh, K., Holden, H. M., and Rayment, I. Structural studies of myosin: nucleotide complexes: A revised model for the molecular basis of muscle contraction, 19s
Fishman, H. M. *See* Krause, Magarshak, Fishman, and Bittner.
Fjuita, S. *See* Yamada and Fjuita.
Fletcher, G. H. *See* Maconochie, Fletcher, and Steinbach.
Fodor, S. P. A. *See* Mazzola and Fodor.
Fontell, K. *See* Orädd, Lindblom, Fontell, and Ljusberg-Wahren.
Ford, R. M. *See* Duffy, Cummings, and Ford.
Frank, G. *See* Schaub, Frank, and Koch.
Frank-Kamenetskii, M. D. *See* Klenin, Frank-Kamenetskii, and Langowski.
Franks-Skiba, K. and Cooke, R. The conformation of the active site of myosin probed using mant-nucleotides, 142s
Fratzl, P. *See* Hulmes, Wess, Prockop, and Fratzl.
Fredkin, D. R. *See* Beroza, Fredkin, Okamura, and Feher.
Friedman, A. L. and Goldman, Y. E. Mechanics studies of bundles of two to three myofibrils from rabbit psoas muscle, 361s
Friel, D. D. $[Ca2^+]_i$ oscillations in sympathetic neurons: An experimental test of a theoretical model, 1752
Fritzsche, H. *See* Song, Rupprecht, and Fritzsche.
Fuchs, P. A. *See* Zidanic and Fuchs.
Fujime, S. *See* Takayama and Fujime.
Fullerton, G. D. *See* Keener, Fullerton, Cameron, and Xiong.
Fung, L. W.-M. *See* Hatfield and Fung.
Furuno, T. *See* Miyata, Yoshikawa, Hakozaki, Suzuki, Furuno, Ikegami, Kinosita, Nishizaka, and Ishiwata.

G

Galambos, C. *See* de Beer, Sontrop, Kellermayer, Galambos, and Pollack.
Gale, M., Pollanen, M. S., Markiewicz, P., and Goh, M. C. Sequential assembly of collagen revealed by atomic force microscopy, 2124
Gallay, J. *See* Meuwis, Boens, De Schryver, Gallay, and Vincent.
——— *See* van den Bergh, Boens, De Schryver, Ameloot, Steels, Gallay, Vincent, and Kowalczyk.
——— *See* Bordas, Lowy, Svensson, Harries, Diakun, Gandy, Miles, Mant, and Towns-Andrews.
Garcia, A. E. *See* Hummer, Garcia, and Soumpasis.
Gasset, M. *See* Mancheño, Gasset, Albar, Lacadena, Martínez del Pozo, Oñaderra, and Gavilanes.
Gavilanes, F. *See* Fernandez-Ballester, Gavilanes, Albar, Criado, Ferragut, and Gonzalez-Ros.
Gavilanes, J. G. *See* Mancheño, Gasset, Albar, Lacadena, Martínez del Pozo, Oñaderra, and Gavilanes.
Gavish, B. *See* Yedgar, Tetreau, Gavish, and Lavalette.
Gawrisch, K. *See* Holte, Peter, Sinnwell, and Gawrisch.
Gebe, J. A., Allison, S. A., Clendenning, J. B., and Schurr, J. M. Monte Carlo simulations of supercoiling free energies for unknotted and trefoil knotted DNAs, 619
Geddis, L. M. *See* Karon, Geddis, Kutchai, and Thomas.
Geeves, M. A. and Conibear, P. B. The role of three-state docking of myosin S1 with actin in force generation, 194s
Geeves, M. A. *See* Anson, Drummond, Geeves, Hennessey, Ritchie, and Sparrow.
Gelles, J., Berliner, E., Young, E. C., Mahtani, H. K., Perez-Ramirez, B., and Anderson, K. Structural and functional features of one- and two-headed biotinated kinesin derivatives, 276s
Gelles, J., Yin, H., Finzi, L., Wong, O. K., and Landick, R. Single-molecule kinetic studies on DNA transcription and transcriptional regulation, 73s
Gensch, T. *See* van Brederode, Gensch, Hoff, Hellingwerf, and Braslavsky.
Gerisch, G. *See* Schindl, Wallraff, Deubzer, Witke, Gerisch, and Sackmann.
Gheber, L. *See* Tarasiuk, Bar-Shimon, Gheber, Korngreen, Grossman, and Priel.
Ghodke, U. and Dreizen, P. Thermally dependent Mg^{2+}-induced self-association of heavy meromyosin: Kinetics and structure, 352s
Ghodke, U. *See* Dreizen, Ghodke, and Shi.
Ghosh, R. N. *See* Mandeville, Ghosh, and Maxfield.
Gibson, W. G. *See* Bennett, Farnell, Gibson, and Karunanithi.
Giese, K. C., Patterson, R. B., and Spudich, J. A. Biochemical analysis of myosin mutations of the actin binding, 338s

Gilat, T. *See* Sömjen, Lipka, Schulthess, Koch, Wachtel, Gilat, and Hauser.
Gilbert, S. P., Webb, M. R., Brune, M., and Johnson, K. A. Pre-steady-state kinetics of the microtubule · kinesin ATPase, 357s
Gilbert, S. P. *See* Johnson and Gilbert.
Gillespie, P. G. Myosin I-β and adaptation of hair cell transduction, 358s
Gilson, M. K. *See* Antosiewicz, Gilson, Lee, and McCammon.
Gilula, N. B. *See* Buehler, Stauffer, Gilula, and Kumar.
Gimm, J. A. *See* Prausnitz, Corbett, Gimm, Golan, Langer, and Weaver.
Giusti, A. M. *See* Parasassi, Giusti, Raimondi, and Gratton.
Glöckle, W. G. and Nonnenmacher, T. F. A fractional calculus approach to self-similar protein dynamics, 46
Goh, M. C. *See* Gale, Pollanen, Markiewicz, and Goh.
Golan, D. E. *See* Liu, Hahn, Bierer, and Golan.
Golan, D. E. *See* Prausnitz, Corbett, Gimm, Golan, Langer, and Weaver.
Goldbeck, R. A. *See* Shaprio, Goldbeck, Che, Esquerra, Paquette, and Kliger.
Goldman, Y. E. *See* Allen, Sabido-David, Ling, Irving, and Goldman.
——— *See* Bell, Matta, Thomas, and Goldman.
——— *See* Berger, Craik, Trentham, Corrie, and Goldman.
Goldman, Y. E. *See* Friedman and Goldman.
Goldstein, B. and Dembo, M. Approximating the effects of diffusion on reversible reactions at the cell surface: Ligand-receptor kinetics, 1222
Goldstein, L. S. B. Structural features involved in force generation in the kinesin superfamily, 260s
——— *See* Tucker and Goldstein.
Gollub, J. *See* Zhao, Gollub, and Cooke.
Gómez-Fernández, J. C. *See* Sánchez-Migallón, Aranda, and Gómez-Fernández.
Gomez-Lagunas, F. and Armstrong, C. M. Inactivation in *Shaker*B K^+ channels: A test for the number of inactivating particles on each channel, 89
Gonzalez-Ros, J. M. *See* Fernandez-Ballester, Gavilanes, Albar, Criado, Ferragut, and Gonzalez-Ros.
Gordon, A. M. *See* Chase, Martyn, Kushmerick, and Gordon.
Gordon, G. W., Chazotte, B., Wang, X. F., and Herman, B. Analysis of simulated and experimental fluorescence recovery after photobleaching. Data for two diffusing components, 766
Gorenstein, D. G. *See* Leontis, Hills, Piotto, Ouporov, Malhotra, and Gorenstein.
Graf, J., Rupnik, M., Zupancic, G., and Zorec, R. Osmotic swelling of hepatocytes increases membrane conductance but not membrane capacitance, 1359
Grant, C. W. M. *See* Morrow, Singh, Lu, and Grant.
Granzier, H. L. and Irving, T. C. Passive tension in cardiac muscle: contribution of collagen, titin, microtubules and intermediate filaments, 1027
Gratton, E. *See* Berland, So, and Gratton.
——— *See* Parasassi, Giusti, Raimondi, and Gratton.
Greaser, M. L. *See* Diffee, Greaser, Reinach, and Moss.
Groebe, K. An easy-to-use model for O_2 supply to red muscle: Validity of assumptions, sensitivity to errors in data, 1246
Groot, M.-L., Peterman, E. J. G., van Stokkum, I. H. M., Dekker, J. P., and van Grondelle, R. Triplet and fluorescing states of the CP47 antenna complex of photosystem II studied as a function of temperature, 281
Grossman, Y. *See* Tarasiuk, Bar-Shimon, Gheber, Korngreen, Grossman, and Priel.
Guilford, W. H. *See* VanBuren, Guilford, Kennedy, Wu, and Warshaw.
Gunnarsson, K. *See* Orädd, Lindblom, Arvidson, and Gunnarsson.
Gunner, M. R. *See* Mauzerall, Gunner, and Zhang.
Gunning, A. P. *See* Kirby, Gunning, Morris, and Ridout.
Guo, W. and Hamilton, J. A. Molecular organization and motions of crystalline monoacylglycerols and diacylglycerols: A C-13 MASNMR study, 1383
——— Phase behavior and crystalline structures of cholesteryl ester mixtures: A C-13 MASNMR study, 2376
Guttman, H. J., Anderson, C. F., and Record, M. T., Jr. Analyses of thermodynamic data for concentrated hemoglobin solutions using scaled particle theory: Implications for a simple two-state model of water in thermodynamic analyses of crowding in vitro and in vivo, 835

H

Haas, H., Brezesinski, G., and Möhwald, H. X-ray diffraction of a protein crystal anchored at the air/water interface, 312
Häberle, W. *See* Hörber, Mosbacher, Häberle, Ruppersberg, and Sakmann.
Hackney, D. D. Implications of diffusion-controlled limit for processivity of dimeric kinesin head domains, 267s
Haeberle, J. R. and Hemric, M. E. Are actin filaments moving under unloaded conditions in the in vitro motility assay? 306s
Haendler, B. *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.
Hahn, W. C. *See* Liu, Hahn, Bierer, and Golan.
Hakozaki, K. *See* Miyata, Yoshikawa, Hakozaki, Suzuki, Furuno, Ikegami, Kinosita, Nishizaka, and Ishiwata.
Hall, K. W., Cole, D. G., Yeh, Y., Scholey, J. M., and Baskin, R. J. Force generation in kinesin measured in a centrifuge microscope-based motility assay, 71s
Hallett, F. R. *See* Strawbridge, Palmer, Merrill, and Hallett.
Hallett, P., Offer, G., and Miles, M. J. Atomic force microscopy of the myosin molecule, 1604
Hamaguchi, H.-o. *See* Sasaki, Yuzawa, Kandori, Maeda, and Hamaguchi.
Hamasaki, T., Simon, I., Barkalow, K., and Satir, P. Activation of dynein-mediated in vitro microtubule translocation via phosphorylation of a 29kDa light chain, 323s
Hamasaki, T. *See* Satir, Barkalow, and Hamasaki.
Hamilton, J. A. *See* Guo and Hamilton.
——— *See* Guo and Hamilton.
Hammer, D. A. *See* Bussell, Koch, and Hammer.
——— *See* Bussell, Koch, and Hammer.
——— *See* Soltesz and Hammer.
Han, Y. *See* Brody, Han, Austin, and Bitensky.
Hanes, G. P. *See* Titus, Novak, Hanes, and Urioste.
Hann, M. M. *See* Robinson, Richards, Thomas, and Hann.
Hansma, H. G. Polysaccharide helices in the atomic force microscope, 3
Hansma, H. G., Laney, D. L., Bezanilla, M., Sinsheimer, R. L., and Hansma, P. K. Applications for atomic force microscopy of DNA, 1672
Hansma, P. K. *See* Hansma, Laney, Bezanilla, Sinsheimer, and Hansma.
Härd, T. *See* Eriksson, Härd, and Nilsson.
Harries, J. E. *See* Bordas, Lowy, Svensson, Harries, Diakun, Gandy, Miles, Mant, and Towns-Andrews.
Harris, D. *See* Peterson, Alpert, VanBuren, Harris, and Warshaw.
——— *See* VanBuren, Waller, Harris, Trybus, Warshaw, and Lowey.
Haselgrove, J. C. *See* Baradet, Haselgrove, and Weisel.
Hatfield, K. M. and Fung, L. W.-M. Molecular properties of a stratum corneum model lipid system: Large unilamellar vesicles, 196
Hatta, I. *See* Adachi, Takahashi, Ohki, and Hatta.
——— *See* Quinn, Takahashi, and Hatta.

Hauri, D. C. and Ross, J. A model of excitation and adaptation in bacterial chemotaxis, 708
Hauser, H. *See* Sömjen, Lipka, Schulthess, Koch, Wachtel, Gilat, and Hauser.
Hayakawa, T. *See* Suzuki, Tanaka, Nakajima, Hirano, Itoh, Miyata, Hayakawa, and Kinosita.
Hayden, D. W. *See* Thomas, Ramachandran, Roopnarine, Hayden, and Ostap.
He, K. *See* Wu, He, Ludtke, and Huang.
He, Z.-H. *See* Ferenczi, He, Chillingworth, Brune, Corrie, Trentham, and Webb.
Hegerl, R. *See* Dierksen, Typke, Hegerl, Walz, Sackmann, and Baumeister.
Heimburg, T. and Marsh, D. Protein surface-distribution and protein-protein interactions in the binding of peripheral proteins to charged lipid membranes, 536
Hellingwerf, K. J. *See* van Brederode, Gensch, Hoff, Hellingwerf, and Braslavsky.
Hemminga, M. A. *See* Magusin and Hemminga.
Hemric, M. E. *See* Haeberle and Hemric.
Hennessey, E. S. *See* Anson, Drummond, Geeves, Hennessey, Ritchie, and Sparrow.
Hennink, E. J. *See* Song, Hennink, Young, and Tanke.
Herman, B. *See* Gordon, Chazotte, Wang, and Herman.
Hermann, C. *See* Lionne, Hermann, Travers, and Barman.
Hidalgo, C. *See* Donoso, Prieto, and Hidalgo.
Hideg, K. *See* Raucher, Fajer, Sar, Hideg, Zhao, Kawai, and Fajer.
Highsmith, S. *See* Eden and Highsmith.
Hills, M. T. *See* Leontis, Hills, Piotto, Ouporov, Malhotra, and Gorenstein.
Hingorani, M. M. *See* Patel and Hingorani.
Hirano, K. *See* Suzuki, Tanaka, Nakajima, Hirano, Itoh, Miyata, Hayakawa, and Kinosita.
Ho, C. *See* Fetler, Simplaceanu, and Ho.
——— *See* Chisholm, Chen, Chen, Ho, and Ostrow.
Hoa, G. H. B. *See* Di Primo, Deprez, Hoa, and Douzou.
Hochmuth, R. M. *See* Zhelev and Hochmuth.
Hodges, R. S. *See* Zhang, Lewis, Hodges, and McElhaney.
Hoff, W. D. *See* van Brederode, Gensch, Hoff, Hellingwerf, and Braslavsky.
Holden, H. M. *See* Fisher, Smith, Thoden, Smith, Sutoh, Holden, and Rayment.
Holmes, K. C. The actomyosin interaction and its control by tropomyosin, 2s
Holmes, K. C. *See* Lorenz, Popp, Poole, Rosenbaum, and Holmes.
——— *See* Poole, Holmes, Rayment, and Lorenz.
——— *See* Schroeder, Jahn, Manstein, Spudich, and Holmes.
——— *See* Tirion, ben-Avraham, Lorenz, and Holmes.
Holmes, W. H. *See* Bischof, Padanilam, Holmes, Ezzell, Lee, Tompkins, Yarmush, and Toner.
Holte, L. L., Peter, S. A., Sinnwell, T. M., and Gawrisch, K. ^{2}H nuclear magnetic resonance order parameter profiles suggest a change of molecular shape for phosphatidylcholines containing a polyunsaturated acyl chain, 2396
Holy, T. *See* Duke, Holy, and Leibler.
Holzwarth, J. F. *See* Clarke, Zouni, and Holzwarth.
Hörber, J. K. H., Mosbacher, J., Häberle, W., Ruppersberg, J. P., and Sakmann, B. A look at membrane patches with a scanning force microscope, 1687
Houghten, R. A. *See* Blondelle, Ostresh, Houghten, and Pérez-Payá.
Howard, J. The mechanics of force generation by kinesin, 245s
Hristova, K. *See* Kenworthy, Hristova, Needham, and McIntosh.
Hsiung, H.-H. *See* Shi, Hsiung, Pace, and Stokes.
Huang, H. W. *See* Wu, He, Ludtke, and Huang.
Hughes, L. L. *See* Reynolds, Kempner, Hughes, and Dennis.
Hui, S. W., Viswanathan, R., Zasadzinski, J. A., and Israelachvili, J. N. The structure and stability of phospholipid bilayers by atomic force microscopy, 171
Hulmes, D. J. S., Wess, T. J., Prockop, D. J., and Fratzl, P. Radial packing, order, and disorder in collagen fibrils, 1661
Humbel, B. M. *See* Starink, Humbel, and Verkleij.
Hummer, G., Garcia, A. E., and Soumpasis, D. M. Hydration of nucleic acid fragments: Comparison of theory and experiment for high-resolution crystal structures of RNA, DNA, and DNA-Drug Complexes, 1639
Humphrey, W. *See* Logunov, Humphrey, Schulten, and Sheves.
Hutchinson, C. L., Lakowicz, J. R., and Sevick-Muraca, E. M. Fluorescence lifetime-based sensing in tissues: A computational study, 1574
Huxley, A. F. *See* Burton and Huxley.
Huxley, H. The working stroke of myosin crossbridges, 55s

I

Ikai, A. *See* Kasas and Ikai.
Ikebe, M. *See* Katayama and Ikebe.
——— *See* Sugimoto, Tokunaga, Takezawa, Ikebe, and Wakabayashi.
Ikegami, A. *See* Miyata, Yoshikawa, Hakozaki, Suzuki, Furuno, Ikegami, Kinosita, Nishizaka, and Ishiwata.
Imafuku, Y. *See* Tawada, Imafuku, and Toyoshima.
Irving, M. *See* Allen, Sabido-David, Ling, Irbing, and Goldman.
——— *See* Linari, Dobbie, Vanzi, Török, Irving, Piazzesi, and Lombardi.
——— *See* Piazzesi, Lombardi, Ferenczi, Thirlwell, Dobbie, and Irving.
Irving, T. C. *See* Granzier and Irving.
Ishijima, A. and Yanagida, T. Chemomechanical coupling in the actomyosin motor studied using in vitro nanopico-manipulation, 355s
Ishijima, A. *See* Yanagida and Ishijima.
Ishiwata, S. *See* Miyata, Yoshikawa, Hakozaki, Suzuki, Furuno, Ikegami, Kinosita, Nishizaka, and Ishiwata.
——— *See* Nishizaka, Miyata, Yoshikawa, Ishiwata, and Kinosita.
——— *See* Yasuda, Anazawa, and Ishiwata.
Israelachvili, J. N. *See* Hui, Viswanathan, Zasadzinski, and Israelachvili.
Itoh, H. *See* Suzuki, Tanaka, Nakajima, Hirano, Itoh, Miyata, Hayakawa, and Kinosita.
——— **and Adelstein, R. S.** Neuronal cell expression of vertebrate nonmuscle myosin heavy chain II-B, 334s
Iwamoto, H. Strain sensitivity and turnover rate of low-force crossbridges in contracting skeletal muscle fibers in the presence of phosphate, 243
——— **Kobayashi, T., Amemiya, Y., and Wakabayashi, K.** Effect of stretch and release on equatorial x-ray diffraction during a twitch contraction of frog skeletal muscle, 227
Iwasa, K. H., Li, M., and Jia, M. Can membrane proteins drive a cell? 214s
Izu, L. T. and Spangler, R. A. A class of parametrically excited calcium oscillation detectors, 1622

J

Jahn, W. *See* Schroeder, Jahn, Manstein, Spudich, and Holmes.
Jain, R. K. *See* Johnson, Berk, Jain, and Deen.
Jakana, J. *See* Schmid, Jakana, Matsudaira, and Chiu.
James, T. L. *See* Ulyanov, Schmitz, Kumar, and James.
Janmey, P. *See* Prochniewicz, Zhang, Janmey, and Thomas.

Jansen, M. and Blume, A. A comparative study of diffusive and osmotic water permeation across bilayers composed of phospholipids with different head groups and fatty acyl chains, 997

Jelicks, L. A. and Wittenberg, B. A. ^{1}H nuclear magnetic resonance studies of sarcoplasmic oxygenation in the red cell-perfused rat heart, 2129

Jernigan, R. L. *See* Mazur and Jernigan.

Jewsbury, P. and Kitagawa, T. The distal residue-CO Interaction in carbonmonoxy myoglobins: A molecular dynamics study of 3 distal mutants, 1283

Jia, M. *See* Iwasa, Li, and Jia.

Jiang, M. Y. and Sheetz, M. P. Cargo-Activated ATPase Activity of Kinesin, 283s

Johnson, E. M., Berk, D. A., Jain, R. K., and Deen, W. M. Diffusion and partitioning of proteins in charged agarose gels, 1561

Johnson, K. A. and Gilbert, S. P. Pathway of the microtubule-kinesin ATPase, 173s

Johnson, K. A. *See* Gilbert, Webb, Brune, and Johnson.

Joho, R. H. *See* Körz, Zöhlke, Zhang, and Joho.

Jonas, A. *See* Peng, Jonas, and Jonas.

Jonas, J. *See* Peng, Jonas, and Jonas.

Jones, L. R. *See* Voss, Mahaney, Jones, and Thomas.

Jones, R. *See* Wriggers, Jones, Schulten, and Keller.

Jordan, P. C. *See* Sancho, Partenskii, Dorman, and Jordan.

K

Kakehata, S. and Santos-Sacchi, J. Membrane tension directly shifts voltage dependence of outer hair cell motility and associated gating charge, 2190

Kandori, H. *See* Sasaki, Yuzawa, Kandori, Maeda, and Hamaguchi.

Karon, B. S., Geddis, L. M., Kutchai, H., and Thomas, D. D. Anesthetics after the physical and functional properties of the Ca-ATPase in cardiac sarcoplasmic reticulum, 936

Karplus, M. *See* Roux, Prod'hom, and Karplus.

Karunanithi, S. *See* Bennett, Farnell, Gibson, and Karunanithi.

Kasas, S. and Ikai, A. A method for anchoring round shaped cells for atomic force microscope imaging, 1678

Katayama, E. and Ikebe, M. Mode of caldesmon binding to smooth muscle thin filament: possible projection of the amino-terminal domain of caldesman from native thin filament, 2419

Kawai, M. and Zhao, Y. Nucleotide-binding site of the myosin head is under the influence of thin filament proteins, 216s

Kawai, M. *See* Raucher, Fajer, Sar, Hideg, Zhao, Kawai, and Fajer.

——— *See* Zhao and Kawai.

Keener, C. R., Fullerton, G. D., Cameron, I. L., and Xiong, J. Solution nonideality related to solute molecular characteristics of amino acids, 291

Keizer, J. Burst busters: Uncovering a new mechanism in pancreatic β-cells, 2216

Keller, D. *See* Wriggers, Jones, Schulten, and Keller.

Kellermayer, M. S. Z. *See* de Beer, Sontrop, Kellermayer, Galambos, and Pollack.

Kelley, C. A. and Adelstein, R. S. Characterization of myosin II isoforms containing insertions of amino acids in the flexible loop near the ATP-binding pocket, 225s

Kempner, E. S. *See* Reynolds, Kempner, Hughes, and Dennis.

Kendrick-Jones, J. *See* Molloy, Burns, Sparrow, Tregear, Kendrick-Jones, and White.

Kennedy, G. *See* VanBuren, Guilford, Kennedy, Wu, and Warshaw.

Kensler, R. W. *See* Levine, Kensler, Yang, and Sweeney.

Kenworthy, A. K., Hristova, K., Needham, D., and McIntosh, T. J. Range and magnitude of the steric pressure between bilayers containing phospholipids with covalently attached poly(ethylene glycol), 1921

Kenworthy, A. K., Simon, S. A., and McIntosh, T. J. Structure and phase behavior of lipid suspensions containing phospholipids with covalently attached poly(ethylene glycol), 1903

Kerr, I. D. *See* Sansom, Son, Sankararamakrishnan, Kerr, and Breed.

Khan, S. *See* Wang, Khan, and Sheetz.

Khusainov, A. A. *See* Tarahovsky, Khusainov, Daugelavichus, and Bakene.

Kienker, P. K. and Lear, J. D. Charge selectivity of the designed uncharged peptide ion channel Ac-(LSSLLSL)3-CONH2, 1347

Kinnally, K. W. *See* Lohret and Kinnally.

Kinnunen, P. K. J. *See* Lehtonen and Kinnunen.

——— *See* Lehtonen and Kinnunen.

Kinose, F. *See* Winkelmann, Bourdieu, Kinose, and Libchaber

——— *See* Winkelmann, Bourdieu, Ott, Kinose, and Libchaber.

Kinosita, K., Jr. *See* Miyata, Yoshikawa, Hakozaki, Suzuki, Furuno, Ikegami, Kinosita, Nishizaka, and Ishiwata.

——— *See* Nishizaka, Miyata, Yoshikawa, Ishiwata, and Kinosita.

———*See* Suzuki, Tanaka, Nakajima, Hirano, Itoh, Miyata, Hayakawa, and Kinosita.

Kirby, A. R., Gunning, A. P., Morris, V. J., and Ridout, M. J. Observation of the helical structure of the bacterial polysaccharide acetan by atomic force microscopy, 360

Kirsch, G. E., Pascual, J. M., and Shieh, C.-C. Functional role of a conserved aspartate in the external mouth of voltage-gated potassium channels, 1810

Kitagawa, T. *See* Jewsbury and Kitagawa.

Kleijn, J. M. *See* Bos and Kleijn.

——— *See* Bos and Kleijn.

Klenin, K. V., Frank-Kamenetskii, M. D., and Langowski, J. Modulation of intramolecular interactions in superhelical DNA by curved sequences: A Monte Carlo simulation study, 81

Kliger, D. S. *See* Shaprio, Goldbeck, Che, Esquerra, Paquette, and Kliger.

Kluge, K. *See* Tomaselli, Chiamvimonvat, Nuss, Balser, Pérez-García, Kluge, Orias, Backx, and Marban.

Kobayashi, T. *See* Iwamoto, Kobayashi, Amemiya, and Wakabayashi.

Koch, D. L. *See* Bussell, Koch, and Hammer.

——— *See* Bussell, Koch, and Hammer.

Koch, D. *See* Schaub, Frank, and Koch.

Koch, M. H. J. *See* Sömjen, Lipka, Schulthess, Koch, Wachtel, Gilat, and Hauser.

König, S., Bayerl, T. M., Coddens, G., Richter, D., and Sackmann, E. Hydration dependence of chain dynamics and local diffusion in L-α-dipalmitoylphosphtidycholine multilayers studied by incoherent quasi-elastic neutron scattering, 1871

Korngreen, A. *See* Tarasiuk, Bar-Shimon, Gheber, Korngreen, Grossman, and Priel.

Körz, L. L., Zöhlke, R. D., Zhang, H.-J., and Joho, R. H. Side-chain accessibilities in the pore of a K^+ channel probed by sulfhydryl-specific reagents after cysteine-scanning mutagenesis, 900

Koutalos, Y., Nakatani, K., and Yau, K. W. Cyclic GMP diffusion coefficient in rod photoreceptor outer segments, 373

Kouyama, T. *See* Miki and Kouyama.

Kowalczyk, A. *See* van den Bergh, Boens, De Schryver, Ameloot, Steels, Gallay, Vincent, and Kowalczyk.

Koynova, R., Tenchov, B. G., Todinova, S., and Quinn, P. J. Rapid reversible formation of a metastable subgel phase in saturated diacylphosphatidylcholines, 2370

Kozack, R. E., d'Mello, M. J., and Subramaniam, S. Computer modeling of electrostatic steering and orientational effects in antibody-antigen association, 807
Kraft, T., Chalovich, J. M., Yu, L. C., and Brenner, B. Parallel inhibition of active force and relaxed fiber stiffness by caldesmon fragments at physiological ionic strength and temperature conditions: Additional evidence that weak cross-bridge binding to action is an essential intermediate for force generation, 2404
Kraft, T., Messerli, M., Rutishauser, B., Wallimann, T., Perriard, J.-C., Chalovich, J. M., and Brenner, B. Equilibration and exchange of fluorescently labeled molecules in skeletal muscle fibers studied using confocal microscopy, 371s
Krätzschmar, J. *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.
Krause, T. L., Magarshak, Y., Fishman, H. M., and Bittner, G. D. Membrane potential and input resistance are ambiguous measures of sealing of transected cable-like structures, 795
Kulkarni, V. S. *See* Brown, Anderson, and Kulkarni.
Kull, F. J. *See* Eden, Luu, Zapata, Sablin, and Kull.
Kumar, A. *See* Ulyanov, Schmitz, Kumar, and James.
Kumar, N. M. *See* Buehler, Stauffer, Gilula, and Kumar.
Kuo, S. C., Ramanathan, K., and Sorg, B. Single kinesin molecules stressed with optical tweezers, 74s
Kushmerick, M. J. *See* Chase, Martyn, Kushmerick, and Gordon.
Kutchai, H. *See* Karon, Geddis, Kutchai, and Thomas.
——— *See* Mersol, Kutchai, Mahaney, and Thomas.

L

Lacadena, J. *See* Mancheño, Gasset, Albar, Lacadena, Martínez del Pozo, Oñaderra, and Gavilanes.
Lafleur, M. *See* Monette and Lafleur.
Lakowicz, J. R. *See* Hutchinson, Lakowicz, and Sevick-Muraca.
——— *See* Terpetschnig, Szmacinski, Malak, and Lakowicz.
Lamb, G. D. and Stephenson, D. G. Activation of ryanodine receptors by flash photolysis of caged Ca^{2+}, 946
Lami, H. *See* Vix and Lami.
Landick, R. *See* Gelles, Yin, Finzi, Wong, and Landick.
Laney, D. L. *See* Hansma, Laney, Bezanilla, Sinsheimer, and Hansma.
Langer, R. *See* Prausnitz, Corbett, Gimm, Golan, Langer, and Weaver.
Langowski, J. *See* Klenin, Frank-Kamenetskii, and Langowski.
Lanyi, J. K. *See* Cao, Brown, Sasaki, Maeda, Needleman, and Lanyi.
——— *See* Nagle, Zimanyi, and Lanyi.
——— *See* Váró, Zimányi, Fan, Sun, Needleman, and Lanyi.
Lavalette, D. *See* Yedgar, Tetreau, Gavish, and Lavalette.
Lavergne, J. and Trissl, H.-W. Theory of fluorescence induction in photosystem II: Derivation of analytical expressions in a model including exciton—radical-pair equilibrium and restricted energy transfer between photosynthetic units, 2474
Lawson, J. D. *See* Yount, Lawson, and Rayment.
Le Guernevé, C. and Auger, M. New approach to study fast and slow motions in lipid bilayers: Application dimyristoylphosphatidycholine cholesterol interactions, 1952
Leader, J. P. *See* Wilson and Leader.
Lear, J. D. *See* Kienker and Lear.
Leckband, D. E. *See* Balgi, Leckband, and Nitsche.
——— Using the soft touch on cell surfaces, 2215
Lee, I. H. *See* Antosiewicz, Gilson, Lee, and McCammon.
Lee, K. Y. C. and McConnell, H. M. Effect of electric field gradients on lipid monolayer membranes, 1740
Lee, R. C. *See* Bischof, Padanilam, Holmes, Ezzell, Lee, Tompkins, Yarmush, and Toner.
Lehtonen, J. Y. A. and Kinnunen, P. K. J. Phospholipase A_2 as a mechanosensor, 1888
——— Poly(ethylene glycol)-induced and temperature-dependent phase separation in fluid binary phospholipid membranes, 525
Leibler, S. *See* Duke, Holy, and Leibler.
——— *See* Duke and Leibler.
Lenhoff, A. M. *See* Chae and Lenhoff.
Léonard, A. *See* Douliez, Léonard, and Dufourc.
Leontis, N. B., Hills, M. T., Piotto, M., Ouporov, I. V., Malhotra, A., and Gorenstein, D. G. Helical stacking in DNA three-way junctions containing two unpaired pyrimidines: Proton NMR studies, 251
Leontis, N. B. *See* Ouporov and Leontis.
Levine, R. J. C., Kensler, R. W., Yang, Z., and Sweeney, H. L. Myosin regulatory light chain phosphorylation and the production of functionally significant changes in myosin head arrangement on striated muscle thick filaments, 224s
Lewis, R. N. A. H. *See* Zhang, Lewis, Hodges, and McElhaney.
Li, D. *See* Muslin, Li, Stevens, Donnelly, Schiffer, and Anderson.
Li, H.-C. *See* Fajer, Szczesna, and Li.
Li, M. *See* Iwasa, Li, and Jia.
Libchaber, A. *See* Winkelmann, Bourdieu, Kinose, and Libchaber.
——— *See* Winkelmann, Bourdieu, Ott, Kinose, and Libchaber.
Liebovitch, L. S. Fractals in Science. A. Bunde and S. Havlin, Editors (book review), 391
Linari, M., Dobbie, I., Vanzi, F., Török, K., Irving, M., Piazzesi, G., and Lombardi, V. Comparison Between Tension Transients during Isometric Contraction and in Rigor in Isolated Fibers from Frog Skeletal Muscle, 218s
Linari, M. *See* Vanzi, Piazzesi, Linari, Reconditi, and Lombardi.
Lindberg, U. *See* Rozicky, Chik, Lindberg, and Schutt.
——— *See* Schutt, Rozycki, Chik, and Lindberg.
Lindblom, G. *See* Orädd, Lindblom, Arvidson, and Gunnarsson.
——— *See* Orädd, Lindblom, Fontell, and Ljusberg-Wahren.
Ling, N. *See* Allen, Sabido-David, Ling, Irving, and Goldman.
Lionne, C., Hermann, C., Travers, F., and Barman, T. The myofibril as a model for muscle fiber ATPase, 217s
Lipka, G. *See* Sömjen, Lipka, Schulthess, Koch, Wachtel, Gilat, and Hauser.
Liu, S.-q. J., Hahn, W. C., Bierer, B. E., and Golan, D. E. Intracellular mediators regulate CD2 lateral diffusion and cytoplasmic Ca^{2+} mobilization upon CD2-mediated T cell activation, 459
Liu, Y., Cheng, D. K., Sonek, G. J., Berns, M. W., Chapman, C. F., and Tromberg, B. J. Evidence for localized cell heating induced by infrared optical tweezers, 2137
Liu, Z. *See* Qin, Liu, and Sui.
Ljusberg-Wahren, H. *See* Orädd, Lindblom, Fontell, and Ljusberg-Wahren.
Löbbecke, L. *See* Otten, Löbbecke, and Beyer.
Loew, G. H. *See* Du and Loew.
Logunov, I., Humphrey, W., Schulten, K., and Sheves, M. Molecular dynamics study of the 13-*cis* form (bR548) of bacteriorhodopsin and its photocycle, 1270
Lohman, T. M. *See* Moore and Lohman.
——— *See* Moore and Lohman.
Lohret, T. A. and Kinnally, K. W. Multiple conductance channel activity of wild-type and voltage-dependent anion selective channel (VDAC)-less yeast mitochondria, 2299
Lombardi, V. *See* Linari, Dobbie, Vanzi, Török, Irving, Piazzesi, and Lombardi.
——— *See* Piazzesi and Lombardi.
——— *See* Piazzesi and Lombardi.
——— *See* Piazzesi, Lombardi, Ferenczi, Thirlwell, Dobbie, and Irving.
Lombardi, V. *See* Vanzi, Piazzesi, Linari, Reconditi, and Lombardi.

Lorenz, M., Popp, D., Poole, K. J. V., Rosenbaum, G., and Holmes, K. C. An atomic model of the unregulated thin filament obtained by x-ray fiber diffraction on oriented actin-tropomyosin gels, 347s
Lorenz, M. *See* Poole, Holmes, Rayment, and Lorenz.
——— *See* Tirion, ben-Avraham, Lorenz, and Holmes.
Lowey, S. and Trybus, K. M. Role of skeletal and smooth muscle myosin light chains, 120s
Lowey, S. *See* VanBuren, Waller, Harris, Trybus, Warshaw, and Lowey.
Lown, J. W. *See* Chen and Lown.
Lowy, J. *See* Bordas, Lowy, Svensson, Harries, Diakun, Gandy, Miles, Mant, and Towns-Andrews.
Lu, D., Vavasour, I., and Morrow, M. R. Smoothed acyl chain orientational order parameter profiles in dimyristoyl phosphatidylcholine-distearoyl phosphatidylcholine mixtures: A ^{2}H-NMR study, 574
Lu, D. *See* Morrow, Singh, Lu, and Grant.
Ludtke, S. J. *See* Wu, He, Ludtke, and Huang.
Lukashev, E. P. *See* Robertson and Lukashev.
Luu, B. Q. *See* Eden, Luu, Zapata, Sablin, and Kull.

M

Ma, J. Desensitization of the skeletal muscle ryanodine receptor: Evidence for heterogeneity of calcium release channels, 893
Maconochie, D. J., Fletcher, G. H., and Steinbach, J. H. The conductance of the muscle nicotinic receptor channel changes rapidly upon gating, 483
Maeda, A. *See* Cao, Brown, Sasaki, Maeda, Needleman, and Lanyi.
——— *See* Sasaki, Yuzawa, Kandori, Maeda, and Hamaguchi.
Magarshak, Y. *See* Krause, Magarshak, Fishman, and Bittner.
Maget-Dana, R. and Ptak, M. Interactions of surfactin with membrane models, 1937
Magusin, P. C. M. M. and Hemminga, M. A. 2D-exchange ^{31}P NMR spectroscopy of bacteriophage M13 and tobacco mosaic virus, 1128
Mahaney, J. E. *See* Mersol, Kutchai, Mahaney, and Thomas.
——— *See* Voss, Mahaney, Jones, and Thomas.
Mahtani, H. K. *See* Gelles, Berliner, Young, Mahtani, Perez-Ramirez, and Anderson.
Majima, T. A Proposed energy-parceling mechanism of muscle contraction, 324s
Malak, H. *See* Terpetschnig, Szmacinski, Malak, and Lakowicz.
Malhotra, A. *See* Leontis, Hills, Piotto, Ouporov, Malhotra, and Gorenstein.
Malinchik, S. and Yu, L. C. Analysis of equatorial x-ray diffraction patterns from muscle fibers: Factors that affect the intensities, 2023
Mancheño, J. M., Gasset, M., Albar, J. P., Lacadena, J., Martínez del Pozo, A., Oñaderra, M., and Gavilanes, J. G. Membrane interaction of a β-structure-forming synthetic peptide comprising the 116–139th sequence region of the cytotoxic protein α-sarcin, 2387
Mandeville, J. T. H., Ghosh, R. N., and Maxfield, F. R. Intracellular calcium levels correlate with speed and persistent forward motion in migrating neutrophils, 1207
Manstein, D. J. *See* Woodward and Manstein.
——— *See* Schroeder, Jahn, Manstein, Spudich, and Holmes.
Mant, G. R. *See* Bordas, Lowy, Svensson, Harries, Diakun, Gandy, Miles, Mant, and Towns-Andrews.
Marban, E. *See* Tomaselli, Chiamvimonvat, Nuss, Balser, Pérez-García, Kluge, Orias, Backx, and Marban.
Marchant, R. E. *See* Eppell, Simmons, Albrecht, and Marchant.
Markiewicz, P. *See* Gale, Pollanen, Markiewicz, and Goh.
Marsh, D. *See* Heimburg and Marsh.
Marszalek, P. and Tsong, T. Y. Cell fission and formation of mini cell bodies by high frequency alternating electric field, 1218
Martin, B. M. *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.
Martin, F. *See* Bertram, Smolen, Sherman, Mears, Atwater, Martin, and Soria.
Martínez del Pozo, A. *See* Mancheño, Gasset, Albar, Lacadena, Martínez del Pozo, Oñaderra, and Gavilanes.
Martyn, D. A. and Chase, P. B. Faster force transient kinetics at submaximal Ca^{2+} activation of skinned psoas fibers from rabbit, 235
Martyn, D. A. *See* Chase, Martyn, Kushmerick, and Gordon.
Mateo, C. R., Acuña, A. U., and Brochon, J.-C. Liquid-crystalline phases of cholesterol/lipid bilayers as revealed by the fluorescene of *trans*-parinaric acid, 978
Matsudaira, P. *See* Schmid, Jakana, Matsudaira, and Chiu.
Matta, J. J. *See* Bell, Matta, Thomas, and Goldman.
Mautone, A. J. *See* Scarpelli and Mautone.
Mauzerall, D. C., Gunner, M. R., and Zhang, J. W. Volume contraction on photoexcitation of the reaction center from *Rhodobacter sphaeroides* R-26: Internal probe of dielectrics, 275
Maxfield, F. R. *See* Mandeville, Ghosh, and Maxfield.
Mayo, K. H. *See* Mikhailov, Daragan, and Mayo.
Mazur, J. and Jernigan, R. L. A comparison of rotation models for describing DNA conformations: Applications to static and polymorphic forms, 1472
Mazzola, L. T. and Fodor, S. P. A. Imaging biomolecule arrays by atomic force microscopy, 1653
McCammon, J. A. *See* Antosiewicz, Gilson, Lee, and McCammon.
McConnell, H. M. *See* Lee and McConnell.
McElhaney, R. N. *See* Zhang, Lewis, Hodges, and McElhaney.
McIntosh, T. J. *See* Kenworthy, Hristova, Needham, and McIntosh.
——— *See* Kenworthy, Simon, and McIntosh.
McLaughlin, S. *See* Peitzsch, Eisenberg, Sharp, and McLaughlin.
Mears, D. *See* Bertram, Smolen, Sherman, Mears, Atwater, Martin, and Soria.
Mehta, A. D. *See* Finer, Mehta, and Spudich.
Menzinger, F. *See* Andreani, Filabozzi, Menzinger, Desideri, Deriu, and Di Cola.
Merkel, R. *See* Evans, Ritchie, and Merkel.
Merrill, A. R. *See* Strawbridge, Palmer, Merrill, and Hallett.
Mersol, J. V., Kutchai, H., Mahaney, J. E., and Thomas, D. D. Self-association accompanies inhibition of CaATPase by thapsigargin, 208
Messerli, M. *See* Kraft, Messerli, Rutishauser, Wallimann, Perriard, Chalovich, and Brenner.
Metherell, A. F. The possible role of surface physics in muscle contraction and individual motor molecule movement, 359s
Metzger, J. M. Myosin binding-induced cooperative activation of the thin filament in cardiac myocytes and skeletal muscle fibers, 1430
Meuwis, K., Boens, N., De Schryver, F. C., Gallay, J., and Vincent, M. Photophysics of the fluorescent K^+ indicator PBFI, 2469
Meyer, T. E. *See* Salamon, Meyer, and Tollin.
Mikhailov, D., Daragan, V. A., and Mayo, K. H. C-multiplet NMR relaxation-derived ring puckering and backbone dynamics in proline-containing glycine-based peptides, 1540
Miki, M. and Kouyama, T. Domain motion in actin: Determination of interdomain distance distribution by time-resolved fluorescence energy transfer, 330s
Miles, C. *See* Bordas, Lowy, Svensson, Harries, Diakun, Gandy, Miles, Mant, and Towns-Andrews.
Miles, M. J. *See* Hallett, Offer, and Miles.
Miller, C. J., Cheung, P., White, P., and Reister, E. Actin's view of actomyosin interface, 50s

Mills, P. A novel computational prediction of ion effects in oligocation-oligonucleotide equilibria, 400
Mimuro, M. *See* Demidov and Mimuro.
Minton, A. P. Confinement as a determinant of macromolecular structure and reactivity. II. Effects of weakly attractive interactions between confined macrosolutes and confining structures, 1311
Mitra, P. P. *See* Svoboda, Mitra, and Block.
Miyata, H., Yoshikawa, H., Hakozaki, K., Suzuki, N., Furuno, T., Ikegami, A., Kinosita, K., Jr., Nishizaka, T., and Ishiwata, S. Mechanical measurements of single actomyosin motor force, 286s
Miyata, H. *See* Nishizaka, Miyata, Yoshikawa, Ishiwata, and Kinosita.
——— *See* Suzuki, Tanaka, Nakajima, Hirano, Itoh, Miyata, Hayakawa, and Kinosita.
Mochca-Morales, J. *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.
Möhwald, H. *See* Haas, Brezesinski, and Möhwald.
Möller, D. J., Schabert, F. A., Böldt, G., and Engel, A. Imaging purple membranes in aqueous solutions at sub-nanometer resolution by atomic force microscopy, 1681
Molloy, J. E., Burns, J. E., Sparrow, J. C., Tregear, R. T., Kendrick-Jones, J., and White, D. C. S. Single-molecule mechanics of heavy meromyosin and S1 interacting with rabbit or *drosophila* actins using optical tweezers, 298s
Monette, M. and Lafleur, M. Modulation of melittin-induced lysis by surface charge density of membranes, 187
Moore, J. D. and Endow, S. A. An Investigation of structural mechanisms for directional reversal in the *drosophila* kinesin protein, ncd, 368s
Moore, K. J. M. and Lohman, T. M. Helicase-catalyzed DNA unwinding: Energy coupling by DNA motor proteins, 180s
——— Kinetic mechanism of adenine nucleotide binding to the *Escherichia coli* rep helicase, 340s
Moore, L. E., Buchanan, J. T., and Murphey, C. R. Localization and interaction of *N*-methyl-D-aspartate and non-*N*-methyl-D-aspartate receptors of lamprey spinal neurons, 96
Morris, V. J. *See* Kirby, Gunning, Morris, and Ridout.
Morrisette, J., Krätzschmar, J., Haendler, B., El-Hayek, R., Mochca-Morales, J., Martin, B. M., Patel, J. R., Moss, R. L., Schleuning, W.-D., Coronado, R., and Possani, L. D. Primary structure and properties of helothermine, a peptide toxin that blocks ryanodine receptors, 2280
Morrow, M. R., Singh, D., Lu, D., and Grant, C. W. M. Glycosphingolipid fatty acid arrangement in phospholipid bilayers: Cholesterol effects, 179
Morrow, M. R. *See* Lu, Vavasour, and Morrow.
Morse, P. D., II *See* Smirnov, Smirnova, and Morse.
Mosbacher, J. *See* Hörber, Mosbacher, Häberle, Ruppersberg, and Sakmann.
Moss, R. L. *See* Diffee, Greaser, Reinach, and Moss.
——— *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.
Murphey, C. R. *See* Moore, Buchanan, and Murphey.
Murray, J. D. *See* Woodward, Tyson, Myerscough, Murray, Budrene, and Berg.
Muslin, E. H., Li, D., Stevens, F. J., Donnelly, M., Schiffer, M., and Anderson, L. E. Engineering a domain-locking disulfide into a bacterial malate dehydrogenase produces a redox-sensitive enzyme, 2218
Musser, S. M. and Chan, S. I. Understanding the cytochrome *c* oxidase proton pump: thermodynamics of redox linkage, 2543
Muzzio, F. J. *See* Riley, Buettner, Muzzio, and Reyes.
Myerscough, M. R. *See* Woodward, Tyson, Myerscough, Murray, Budrene, and Berg.

N

Naber, N. and Cooke, R. Spin-labeled nucleotides bound to kinesin family motors, 364s
Naber, N. *See* Fajer, Ostap, Thomas, Naber, Cooke, and Fajer.
——— *See* Zhao, Naber, and Cooke.
Nagle, J. F., Zimanyi, L., and Lanyi, J. K. Testing BR photocycle kinetics, 1491
Nakajima, Y. *See* Suzuki, Tanaka, Nakajima, Hirano, Itoh, Miyata, Hayakawa, and Kinosita.
Nakatani, K. *See* Koutalos, Nakatani, and Yau.
Needham, D. *See* Kenworthy, Hristova, Needham, and McIntosh.
Needleman, R. *See* Cao, Brown, Sasaki, Maeda, Needleman, and Lanyi.
——— *See* Váró, Zimányi, Fan, Sun, Needleman, and Lanyi.
Neunlist, M. and Tung, L. Spatial distribution of cardiac transmembrane potentials around an extracellular electrode: Dependence on fiber orientation, 2310
Nicholson, C. Interaction between diffusion and Michaelis-Menten uptake of dopamine After iontophoresis in striatum, 1699
Nienhaus, G. U. *See* Abadan, Chien, Chu, Eng, Nienhaus, and Sligar.
Nilsson, L. *See* Eriksson, Härd, and Nilsson.
Nina, M., Roux, B., and Smith, J. C. Functional interactions in bacteriorhodopsin: A theoretical analysis of retinal hydrogen bonding with water, 25
Nishizaka, T., Miyata, H., Yoshikawa, H., Ishiwata, S., and Kinosita, K., Jr. Mechanical properties of single protein motor of muscle studied by optical tweezers, 75s
Nishizaka, T. *See* Miyata, Yoshikawa, Hakozaki, Suzuki, Furuno, Ikegami, Kinosita, Nishizaka, and Ishiwata.
Nitsche, J. M. *See* Balgi, Leckband, and Nitsche.
Nonnenmacher, T. F. *See* Glöckle and Nonnenmacher.
Novak, K. D. *See* Titus, Novak, Hanes, and Urioste.
Novoderezhkin, V. I. and Razjivin, A. P. Exciton dynamics in circular aggregates: Application to antenna of photosynthetic purple bacteria, 1089
Nuss, H. B. *See* Tomaselli, Chiamvimonvat, Nuss, Balser, Pérez-García, Kluge, Orias, Backx, and Marban.

O

O'Brien, J., Valdivia, H. H., and Block, B. A. Physiological differences between the α and β ryanodine receptors of fish skeletal muscle, 471
Odijkt, T. *See* Ubbink and Odijkt.
Offer, G. *See* Hallett, Offer, and Miles.
Ogden, D. C. *See* Wootten, Corrie, Capiod, Feeney, Trentham, and Ogden.
Ohki, K. *See* Adachi, Takahashi, Ohki, and Hatta.
Okamura, M. Y. *See* Beroza, Fredkin, Okamura, and Feher.
Olivotto, M. *See* Carlà, Cuomo, Arcangeli, and Olivotto.
Olmsted, M. C., Bond, J. P., Anderson, C. F., and Record, M. T., Jr. Grand canonical Monte Carlo molecular and thermodynamic predictions of ion effects on binding of an oligocation (L^{8+}) to the center of DNA oligomers, 634
Olney, J. and Cremo, C. Myosin cross-linked under 10S conditions retains characteristics of the 10S monomer in high salt, 369s
Oñaderra, M. *See* Mancheño, Gasset, Albar, Lacadena, Martínez del Pozo, Oñaderra, and Gavilanes.
Orädd, G., Lindblom, G., Arvidson, G., and Gunnarsson, K. Phase equilibria and molecular packing in the *N,N*-dimethyldodecylamine oxide/gramicidin D/water system studied by ^{2}H nuclear magnetic resonance spectroscopy, 547

Orädd, G., Lindblom, G., Fontell, K., and Ljusberg-Wahren, H. Phase diagram of soybean phosphatidylcholine-diacylglycerol-water studied by x-ray diffraction ^{31}P- and pulsed field gradient ^{1}H-NMR: Evidence for reversed micelles in the cubic phase, 1856

Orias, D. W. *See* Tomaselli, Chiamvimonvat, Nuss, Balser, Pérez-García, Kluge, Orias, Backx, and Marban.

Ortega, J. K. E., Smith, M. E., and Espinosa, M. A. Cell wall extension behavior of *Phycomyces* sporangiophores during the pressure response, 702

Osborn, T. D. and Yager, P. Modeling success and failure of Langmuir-Blodgett transfer of phospholipid bilayers to silicon dioxide, 1364

Ostap, E. M. and Thomas, D. D. Transient detection of spin-labeled myosin's internal dynamics and global orientation during ATP hydrolysis, 335s

Ostap, E. M. *See* Fajer, Ostap, Thomas, Naber, Cooke, and Fajer.

——— *See* Thomas, Ramachandran, Roopnarine, Hayden, and Ostap.

Oster, G. *See* Peskin and Oster.

Ostresh, J. M. *See* Blondelle, Ostresh, Houghten, and Pérez-Payá.

Ostrovsky, B. and Bar-Yam, Y. Motion of polymer ends in homopolymer and heteropolymer collapse, 1694

Ostrow, B. D. *See* Chisholm, Chen, Chen, Ho, and Ostrow.

Ott, A. *See* Winkelmann, Bourdieu, Ott, Kinose, and Libchaber.

Otten, D., Löbbecke, L., and Beyer, K. Stages of the bilayer-micelle transition in the sytem phosphatidylcholine-$C_{12}E_8$ as studied by deuterium- and phosphorous-NMR, light scattering, and calorimetry, 584

Ouporov, I. V. and Leontis, N. B. Refinement of the solution structure of a branched DNA three-way junctions, 266

——— *See* Leontis, Hills, Piotto, Ouporov, Malhotra, and Gorenstein.

Overman, S. A. *See* Thomas, Benevides, Overman, Ueda, Ushizawa, Saitoh, and Tsubi.

P

Pace, R. C. *See* Shi, Hsiung, Pace, and Stokes.

Pace, R. J. *See* Åhrling and Pace.

Padanilam, J. *See* Bischof, Padanilam, Holmes, Ezzell, Lee, Tompkins, Yarmush, and Toner.

Padrós, E. *See* Torres and Padrós.

Palmer, L. R. *See* Strawbridge, Palmer, Merrill, and Hallett.

Pampel, A. *See* Volke and Pampel.

Paquette, S. J. *See* Shaprio, Goldbeck, Che, Esquerra, Paquette, and Kliger.

Parak, F. G. *See* Prusakov, Steyer, and Parak.

Parasassi, T., Giusti, A. M., Raimondi, M., and Gratton, E. Abrupt modifications of phospholipid bilayer properties at critical cholesterol concentrations, 1895

Parkhurst, L. J. A nanosecond ORD study of hemoglobin, 399

Partenskii, M. B. *See* Sancho, Partenskii, Dorman, and Jordan.

Pascual, J. M. *See* Kirsch, Pascual, and Shieh.

Pasternack, R. F. *See* de Paula, Robblee, and Pasternack.

Pate, E. *See* Zhao, Pate, Baker, and Cooke.

Patel, J. R. *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.

Patel, S. S. and Hingorani, M. M. Nucleotide binding studies of bacteriophage T7 DNA helicase-primase protein, 186s

Patterson, R. B. *See* Giese, Patterson, and Spudich.

Peitzsch, R. M., Eisenberg, M., Sharp, K. A., and McLaughlin, S. Calculations of the electrostatic potential adjacent to model phospholipid bilayers, 729

Peng, X., Jonas, A., and Jonas, J. High pressure ^{2}H-NMR study of the order and dynamics of selectively deuterated dipalmitoyl phosphatidylcholine in multilamellar aqueous dispersions, 1137

Pérez-García, M. T. *See* Tomaselli, Chiamvimonvat, Nuss, Balser, Pérez-García, Kluge, Orias, Backx, and Marban.

Pérez-Payá, E. *See* Blondelle, Ostresh, Houghten, and Pérez-Payá.

Perez-Ramirez, B. *See* Gelles, Berliner, Young, Mahtani, Perez-Ramirez, and Anderson.

Perriard, J.-C. *See* Kraft, Messerli, Rutishauser, Wallimann, Perriard, Chalovich, and Brenner.

Peskin, C. S. and Oster, G. Coordinated hydrolysis explains the mechanical behavior of kinesin, 202s

Peter, S. A. *See* Holte, Peter, Sinnwell, and Gawrisch.

Peterman, E. J. G. *See* Groot, Peterman, van Stokkum, Dekker, and van Grondelle.

Peterson, J. N., Alpert, N. R., VanBuren, P., Harris, D., and Warshaw, D. M. Measurement of unitary myocardial cross-bridge events in the intact papillary muscle and the in vitro motility assay, 346s

Pfister, K. K. *See* Dillman and Pfister.

Piazzesi, G. and Lombardi, V. A Cross-bridge model that is able to explain mechanical and energetic properties of shortening muscle, 1966

——— A model of cross-bridge action able to explain mechanical and energetic properties of muscle, 356s

Piazzesi, G., Lombardi, V., Ferenczi, M. A., Thirlwell, H., Dobbie, I., and Irving, M. Changes in the x-ray diffraction pattern from single, intact muscle fibers produced by rapid shortening and stretch, 92s

Piazzesi, G. *See* Linari, Dobbie, Vanzi, Török, Irving, Piazzesi, and Lombardi.

Piazzesi, G. *See* Vanzi, Piazzesi, Linari, Reconditi, and Lombardi.

Pierce, D. W. and Boxer, S. G. Stark effect spectroscopy of tryptophan, 1583

Pihel, K. *See* Wightman, Schroeder, Finnegan, Ciolkowski, and Pihel.

Pine, P. S. *See* Szabó, Weaver, Pine, Rao, and Aszalos.

Piotto, M. *See* Leontis, Hills, Piotto, Ouporov, Malhotra, and Gorenstein.

Piroddi, N. *See* Colomo, Piroddi, Poggesi, and Tesi.

Poggesi, C. *See* Colomo, Piroddi, Poggesi, and Tesi.

Pollack, G. H. *See* de Beer, Sontrop, Kellermayer, Galambos, and Pollack.

Pollanen, M. S. *See* Gale, Pollanen, Markiewicz, and Goh.

Poole, K. J. V., Holmes, K. C., Rayment, I., and Lorenz, M. Control of the actomyosin interaction, 348s

Poole, K. J. V. *See* Lorenz, Popp, Poole, Rosenbaum, and Holmes.

Popp, D. *See* Lorenz, Popp, Poole, Rosenbaum, and Holmes.

Porschke, D. *See* Antosiewicz and Porschke.

Possani, L. D. *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.

Potma, E. J. and Stienen, G. J. M. Influence of inorganic phosphate on ATP in fast and slow skeletal muscle fibers of the rabbit under isometric conditions and during isovelocity shortenings, 350s

Pott, T. and Dufourc, E. J. Action of melittin on the DPPC-cholesterol liquid-ordered phase: A solid state ^{2}H and ^{31}P-NMR study, 965

Potts, R. O. *See* Chizmadzhev, Zarnitsin, Weaver, and Potts.

Prausnitz, M. R., Corbett, J. D., Gimm, J. A., Golan, D. E., Langer, R., and Weaver, J. C. Millisecond measurement of transport during and after an electroporation pulse, 1864

Priel, Z. *See* Tarasiuk, Bar-Shimon, Gheber, Korngreen, Grossman, and Priel.

Prieto, H. *See* Donoso, Prieto, and Hidalgo.

Prochniewicz, E., Zhang, Q., Janmey, P., and Thomas, D. D. Chemical modification of actin restricts microsecond rotational dynamics and inhibits sliding movement, 341s

Prockop, D. J. *See* Hulmes, Wess, Prockop, and Fratzl.

Prod'hom, B. *See* Roux, Prod'hom, and Karplus.

Prusakov, V. E., Steyer, J., and Parak, F. G. Mössbauer spectroscopy on nonequilibrium states of myoglobin: A study of r-t relaxation, 2524
Ptak, M. *See* Maget-Dana and Ptak.

Q

Qin, H., Liu, Z., and Sui, S.-f. Two-dimensional crystallization of avidin on biotinylated lipid monolayers, 2493
Quinn, P. J., Takahashi, H., and Hatta, I. Characterization of complexes formed in fully hydrated dispersions of dipalmitoyl derivatives of phosphatidylcholine and diacylglycerol, 1374
Quinn, P. J. *See* Koynova, Tenchov, Todinova, and Quinn.

R

Rackovsky, S. *See* Rahman and Rackovsky.
Rahman, R. S. and Rackovsky, S. Protein sequence randomness and sequence/structure correlations, 1531
Raimondi, M. *See* Parasassi, Giusti, Raimondi, and Gratton.
Ramachandran, S. *See* Thomas, Ramachandran, Roopnarine, Hayden, and Ostap.
Raman, I. M. and Trussell, L. O. The mechanism of α-amino-3-hydroxy-5-methyl-4-isoxazole propionate receptor desensitization after removal of glutamate, 137
Ramanathan, K. *See* Kuo, Ramanathan, and Sorg.
Rand, R. P. *See* Coorssen and Rand.
Rao, P. E. *See* Szabó, Weaver, Pine, Rao, and Aszalos.
Rapp, G. *See* Czeslik, Winter, Rapp, and Bartels.
Raucher, D., Fajer, E. A., Sar, C., Hideg, K., Zhao, Y., Kawai, M., and Fajer, P. G. A novel electron paramagnetic resonance spin label and its application to study the cross-bridge cycle, 128s
Ravishanker, G. *See* Young, Ravishanker, Beveridge, and Berman.
Rayment, I. *See* Fisher, Smith, Thoden, Smith, Sutoh, Holden, and Rayment.
——— *See* Poole, Holmes, Rayment, and Lorenz.
——— *See* Yount, Lawson, and Rayment.
Razjivin, A. P. *See* Novoderezhkin and Razjivin.
Reconditi, M. *See* Vanzi, Piazzesi, Linari, Reconditi, and Lombardi.
Record, M. T., Jr. and Anderson, C. F. Interpretation of preferential interaction coefficients of nonelectrolytes and of electrolyte ions in terms of a two-domain model, 786
Record, M. T., Jr. *See* Guttman, Anderson, and Record.
——— *See* Olmsted, Bond, Anderson, and Record.
——— *See* Stein, Bond, Capp, Anderson, and Record.
Reese, T. S. *See* Stahlberg, Schuster, Bauer, Baeuerlein, Zhao, Reese, and Khan.
Regehr, W. G. and Atluri, P. P. Calcium transients in cerebellar granule cell presynaptic terminals, 2156
Reggiani, C. *See* Bottinelli and Reggiani.
Reinach, F. C. *See* Diffee, Greaser, Reinach, and Moss.
Reister, E. *See* Miller, Cheung, White, and Reister.
Reyes, S. C. *See* Riley, Buettner, Muzzio, and Reyes.
Reynolds, L. J., Kempner, E. S., Hughes, L. L., and Dennis, E. A. Inactivation of secretory phospholipase A_2 by ionizing radiation, 2108
Richards, W. G. *See* Robinson, Richards, Thomas, and Hann.
Richter, D. *See* König, Bayerl, Coddens, Richter, and Sackmann.
Ridout, M. J. *See* Kirby, Gunning, Morris, and Ridout.
Riley, M. R., Buettner, H. M., Muzzio, F. J., and Reyes, S. C. Monte Carlo simulation of diffusion and reaction in two-dimensional cell structures, 1716
Ritchie, K. *See* Evans, Ritchie, and Merkel.
Ritchie, M. D. *See* Anson, Drummond, Geeves, Hennessey, Ritchie, and Sparrow.
Robblee, J. H. *See* de Paula, Robblee, and Pasternack.
Robertson, B. and Lukashev, E. P. Rapid pH change due to bacteriorhodopsin measured with a tin-oxide electrode, 1507
Robertson, C. R. *See* Anderson and Robertson.
Robeson, J. L. and Tilton, R. D. Effect of concentration quenching on fluorescence recovery after photobleaching measurements, 2145
Robinson, A. J., Richards, W. G., Thomas, P. J., and Hann, M. M. Behavior of cholesterol and its effect on head group and chain conformations in lipid bilayers: A molecular dynamics study, 164
Rodgers, M. E. *See* Davis and Rodgers.
Rogers, M. and Dani, J. A. Comparison of quantitative calcium flux through NMDA, ATP, and ACh receptor channels, 501
Rojewska, D. *See* Elber, Chen, Rojewska, and Eisenberg.
Roopnarine, O., Szent-Györgyi, A. G., and Thomas, D. D. Saturation transfer electron paramagnetic resonance spectroscopy of spin-labeled myosin regulatory light chains in contracting muscle fiber bundles, 337s
Roopnarine, O. and Thomas, D. D. Orientation dynamics of indane dione spin-labeled myosin heads in relaxed and contracting skeletal muscle fibers, 1461
Roopnarine, O. *See* Thomas, Ramachandran, Roopnarine, Hayden, and Ostap.
Rosenbaum, G. *See* Lorenz, Popp, Poole, Rosenbaum, and Holmes.
Ross, J. *See* Hauri and Ross.
Roux, B., Prod'hom, B., and Karplus, M. Ion transport in the gramicidin channel: Molecular dynamics study of single and double occupancy, 876
Roux, B. *See* Nina, Roux, and Smith.
Royer, C. A. Approaches to teaching fluorescence spectroscopy, 1191
Rozicky, M. D., Chik, J. K., Lindberg, U., and Schutt, C. E. Crystallographically observed conformational changes and sulfhydryl reactivity in actin, 367s
Rozycki, M. D. *See* Schutt, Rozycki, Chik, and Lindberg.
Rubinstein, J. T. Threshold fluctuations in an *N* sodium channel node to Raniver, 779
Rudy, Y. *See* Zeng and Rudy.
Rupnik, M. *See* Graf, Rupnik, Zupancic, and Zorec.
Ruppersberg, J. P. *See* Hörber, Mosbacher, Häberle, Ruppersberg, and Sakmann.
Rupprecht, A. *See* Song, Rupprecht, and Fritzsche.
Russell, M. P., Vohnik, S., and Thomas, G. J., Jr. Design and performance of an ultraviolet resonance Raman spectrometer for proteins and nucleic acids, 1607
Rutishauser, B. *See* Kraft, Messerli, Rutishauser, Wallimann, Perriard, Chalovich, and Brenner.

S

Sabido-David, C. *See* Allen, Sabido-David, Ling, Irving, and Goldman
Sablin, E. P. *See* Eden, Luu, Zapata, Sablin, and Kull.
Sackmann, E. *See* Dierksen, Typke, Hegerl, Walz, Sackmann, and Baumeister.
——— *See* König, Bayerl, Coddens, Richter, and Sackmann.
——— *See* Schindl, Wallraff, Deubzer, Witke, Gerisch, and Sackmann.
Saitoh, M. *See* Thomas, Benevides, Overman, Ueda, Ushizawa, Saitoh, and Tsubi.
Sakmann, B. *See* Hörber, Mosbacher, Häberle, Ruppersberg, and Sakmann.
——— *See* Villarroel, Burnashev, and Sakmann
Salamon, Z., Meyer, T. E., and Tollin, G. Photobleaching of the photoactive yellow protein from *Ectothiorhodospira halophila* promotes binding to lipid bilayers: evidence from surface plasmon resonance spectroscopy, 648

Sánchez-Migallón, M. P., Aranda, F. J., and Gómez-Fernández, J. C. The dissimilar effect of diacylglycerols on Ca^{2+}-induced phosphatidylserine vesicle fusion, 558
Sancho, M., Partenskii, M. B., Dorman, V., and Jordan, P. C. Extended dipolar chain model for ion channels: Electrostriction effects and the translocational energy barrier, 427
Sankararamakrishnan, R. *See* Sansom, Son, Sankararamakrishnan, Kerr, and Breed.
Sansom, M. S. P., Son, H. S., Sankararamakrishnan, R., Kerr, I. D., and Breed, J. Seven-helix bundles: Molecular modeling via restrained molecular dynamics, 1295
Santarelli, V. *See* Tu, Santarelli, and Deutsch.
Santos-Sacchi, J. *See* Kakehata and Santos-Sacchi.
Sar, C. *See* Raucher, Fajer, Sar, Hideg, Zhao, Kawai, and Fajer.
Sasaki, J., Yuzawa, T., Kandori, H., Maeda, A., and Hamaguchi, H.-o. Nanosecond time-resolved infrared spectroscopy distinguishes two K species in the bacteriorhodopsin photocycle, 2073
Sasaki, J. *See* Cao, Brown, Sasaki, Maeda, Needleman, and Lanyi.
Satir, P., Barkalow, K., and Hamasaki, T. Ciliary beat frequency is controlled by a dynein light chain phosphorylation, 222s
Satir, P. *See* Hamasaki, Simon, Barkalow, and Satir.
Scarpelli, E. M. and Mautone, A. J. Response to A. D. Bangham (letter), 1633
Schabert, F. A. *See* Möller, Schabert, Böldt, and Engel.
Schaub, M. C., Frank, G., and Koch, D. Crosslinking of the regulatory light chain to cys-815 of the myosin heavy chain, 329s
Schertler, G. F. X. *See* Unger and Schertler.
Schiffer, M. *See* Muslin, Li, Stevens, Donnelly, Schiffer, and Anderson.
Schindl, M., Wallraff, E., Deubzer, B., Witke, W., Gerisch, G., and Sackmann, E. Cell-substrate interactions and locomotion of *Dictyostelium* wild-type and mutants defective in three cytoskeletal proteins: A study using quantitative reflection interference contrast microscopy, 1177
Schleuning, W.-D. *See* Morrisette, Krätzschmar, Haendler, El-Hayek, Mochca-Morales, Martin, Patel, Moss, Schleuning, Coronado, and Possani.
Schmid, M. F., Jakana, J., Matsudaira, P., and Chiu, W. 3-D structure of the acrosomal filament of limulus sperm by 400 kV electron cryomicroscopy, 8s
Schmitz, U. *See* Ulyanov, Schmitz, Kumar, and James.
Schneider, G., Schuchhardt, J., and Wrede, P. Peptide design *in machina*: Development of artificial mitochondrial protein precursor cleavage sites by simulated molecular evolution, 434
Scholey, J. M. *See* Cole and Scholey.
——— *See* Hall, Cole, Yeh, Scholey, and Baskin.
Schroeder, R. R., Jahn, W., Manstein, D., Spudich, J. A., and Holmes, K. C. The use of filter cryo-electron microscopy to reveal details of the actomyosin interaction, 349s
Schroeder, T. J. *See* Wightman, Schroeder, Finnegan, Ciolkowski, and Pihel.
Schuchhardt, J. *See* Schneider, Schuchhardt, and Wrede.
Schulten, K. *See* Logunov, Humphrey, Schulten, and Sheves.
——— *See* Wriggers, Jones, Schuiten, and Keller.
Schulthess, G. *See* Sömjen, Lipka, Schulthess, Koch, Wachtel, Gilat, and Hauser.
Schurr, J. M. *See* Gebe, Allison, Clendenning, and Schurr.
Schuster, S. C. *See* Stahlberg, Schuster, Bauer, Baeuerlein, Zhao, Reese, and Khan.
Schutt, C. E., Rozycki, M. D., Chik, J. K., and Lindberg, U. Structural studies on the ribbon-to-helix transition in profilin: Actin crystals, 12s
Schutt, C. E. *See* Rozicky, Chik, Lindberg, and Schutt.
Schwarz, T. L. *See* Yool and Schwarz.
Seiter, M. *See* Budker, Du, Seiter, Eaton, and Eaton.
Sellers, J. R. *See* Facemyer, Sellers, and Cremo.
Seoh, S.-A. and Busath, D. Gramicidin tryptophans mediate formamidinium-induced channel stabilization, 2271
Sevick-Muraca, E. M. *See* Hutchinson, Lakowicz, and Sevick-Muraca.
Khan, S. *See* Stahlberg, Schuster, Bauer, Baeuerlein, Zhao, Reese, and Khan.
Shaprio, D. B., Goldbeck, R. A., Che, D., Esquerra, R. M., Paquette, S. J., and Kliger, D. S. Nanosecond optical rotatory dispersion spectroscopy: Application to photolyzed hemoglobin-CO kinetics, 326
Sharp, K. A. *See* Peitzsch, Eisenberg, Sharp, and McLaughlin.
Sheetz, M. P. *See* Dai and Sheetz.
——— *See* Jiang and Sheetz
——— *See* Wang, Khan, and Sheetz.
Sherman, A. *See* Bertram, Smolen, Sherman, Mears, Atwater, Martin, and Soria.
Sheves, M. *See* Logunov, Humphrey, Schulten, and Sheves.
Shi, D., Hsiung, H.-H., Pace, R. C., and Stokes, D. L. Preparation and analysis of large, flat crystals of Ca^{2+}-ATPase for electron crystallography, 1152
Shi, J. and Dreizen, P. A molecular mechanics model for the interactions of tropomyosin and actin filament in different regulated states, 353s
Shi, J. *See* Dreizen, Ghodke, and Shi.
Shieh, C.-C. *See* Kirsch, Pascual, and Shieh.
Shohet, S. B. *See* Zimet, Thevenin, Verkman, Shohet, and Abney.
Shull, S. E. *See* Wilson, Shull, and Cooke.
Simanek, V. *See* Farinas, Simanek, and Verkman.
Simmons, S. R. *See* Eppell, Simmons, Albrecht, and Marchant.
Simon, I. *See* Hamasaki, Simon, Barkalow, and Satir.
Simon, S. A. *See* Kenworthy, Simon, and McIntosh.
Simplaceanu, V. *See* Fetler, Simplaceanu, and Ho.
Singh, D. *See* Morrow, Singh, Lu, and Grant.
Sinnwell, T. M. *See* Holte, Peter, Sinnwell, and Gawrisch.
Sinsheimer, R. L. *See* Hansma, Laney, Bezanilla, Sinsheimer, and Hansma.
Sligar, S. G. *See* Abadan, Chien, Chu, Eng, Nienhaus, and Sligar.
Smirnov, A. I., Smirnova, T. I., and Morse, P. D., II Very high frequency electron paramagnetic resonance of 2,2,6,6-tetramethyl 1–1–piperidinyloxy in 1,2-dipalmitoyl–sn-glycerol-3-phosphatidylcholine liposomes: Partitioning and molecular dynamics, 2350
Smirnova, T. I. *See* Smirnov, Smirnova, and Morse.
Smith, C. A. *See* Fisher, Smith, Thoden, Smith, Sutoh, Holden, and Rayment.
Smith, D. A three-line muscle cross-bridge cycle with strain-dependent ligand releases, 215s
Smith, J. C. *See* Nina, Roux, and Smith.
Smith, M. E. *See* Ortega, Smith, and Espinosa.
Smith, R. *See* Fisher, Smith, Thoden, Smith, Sutoh, Holden, and Rayment.
Smolen, P. *See* Bertram, Smolen, Sherman, Mears, Atwater, Martin, and Soria.
So, P. T. C. *See* Berland, So, and Gratton.
Soltesz, S. A. and Hammer, D. A. Micropipette manipulation techniques for the monitoring of pH-dependent membrane lysis as induced by the fusion peptide of influenze virus, 315
Sömjen, G. J., Lipka, G., Schulthess, G., Koch, M. H. J., Wachtel, E., Gilat, T., and Hauser, H. Behavior of cholesterol and spin-labeled cholestane in model bile systems studied by electron spin resonance and synchrotron x ray, 2342
Son, H. S. *See* Sansom, Son, Sankararamakrishnan, Kerr, and Breed.
Sonek, G. J. *See* Liu, Cheng, Sonek, Berns, Chapman, and Tromberg.
Song, L., Hennink, E. J., Young, I. T., and Tanke, H. J. Photobleaching kinetics of fluorescein in quantitative fluorescence microscopy, 2588

Song, Z., Rupprecht, A., and Fritzsche, H. Mechanochemical study of NaDNA and NaDNA-netropsin fibers in ethanol-water and trifluoroethanol-water solutions, 1050
Sontrop, A. A. T. A. *See* de Beer, Sontrop, Kellermayer, Galambos, and Pollack.
Sorg, B. *See* Kuo, Ramanathan, and Sorg.
Soria, B. *See* Bertram, Smolen, Sherman, Mears, Atwater, Martin, and Soria.
Sosinski, J. *See* Chacko, Sosinski, and Wang.
Soumpasis, D. M. *See* Hummer, Garcia, and Soumpasis.
Sowerby, A. J. *See* Engel, Sowerby, Finch, Fechner, and Stier.
Spangler, R. A. *See* Izu and Spangler.
Sparrow, J. C. *See* Anson, Drummond, Geeves, Hennessey, Ritchie, and Sparrow.
——— *See* Molloy, Burns, Sparrow, Tregear, Kendrick-Jones, and White.
Spin, J. M. and Atkinson, D. Cryoelectron microscopy of low density lipoprotein in vitreous ice, 2115
Spires, S. and Begenisich, T. Voltage-independent gating transitions in squid axon potassium channels, 491
Spudich, J. A. *See* Coppin, Finer, Spudich, and Vale.
——— *See* Finer, Mehta, and Spudich.
——— *See* Giese, Patterson, and Spudich.
——— *See* Schroeder, Jahn, Manstein, Spudich, and Holmes.
Stahlberg, A., Schuster, S. C., Bauer, M., Baeuerlein, E., Zhao, R., Reese, T. S., and Khan, S. Conserved machinery of the bacterial flagellar motor, 168s
Starink, J. P. P., Humbel, B. M., and Verkleij, A. J. Three-dimensional localization of immunogold markers using two tilted electron microscope recordings, 2171
Stauffer, K. A. *See* Buehler, Stauffer, Gilula, and Kumar.
Steels, P. *See* van den Bergh, Boens, De Schryver, Ameloot, Steels, Gallay, Vincent, and Kowalczyk.
Stein, V. M., Bond, J. P., Capp, M. W., Anderson, C. F., and Record, M. T., Jr. Importance of coulombic end effects on cation accumulation near oligoelectrolyte B-DNA: A demonstration using ^{23}Na NMR, 1063
Steinbach, J. H. *See* Maconochie, Fletcher, and Steinbach.
Stephenson, D. G. *See* Lamb and Stephenson.
Stevens, F. J. *See* Muslin, Li, Stevens, Donnelly, Schiffer, and Anderson.
Steyer, J. *See* Prusakov, Steyer, and Parak.
Stienen, G. J. M. *See* Potma and Stienen.
Stier, A. *See* Engel, Sowerby, Finch, Fechner, and Stier.
Stokes, D. L. *See* Shi, Hsiung, Pace, and Stokes.
Strawbridge, K. B., Palmer, L. R., Merrill, A. R., and Hallett, F. R. Integrated light scattering spectroscopy, a sensitive probe for peptide-vesicle binding: Application to the membrane-bound colicin E1 channel peptide, 131
Subramaniam, S. *See* Kozack, d'Mello, and Subramaniam.
Sugimoto, Y., Tokunaga, M., Takezawa, Y., Ikebe, M., and Wakabayashi, K. Conformational changes of the myosin heads during hydrolysis of ATP as analyzed by x-ray solution scattering, 29s
Sui, S.-f. *See* Qin, Liu, and Sui.
Sun, L. *See* Váró, Zimányi, Fan, Sun, Needleman, and Lanyi.
Sung, S.-S. Folding simulations of alanine-based peptides with lysine residues, 826
Sutoh, K. *See* Fisher, Smith, Thoden, Smith, Sutoh, Holden, and Rayment.
Suzuki, K., Tanaka, Y., Nakajima, Y., Hirano, K., Itoh, H., Miyata, H., Hayakawa, T., and Kinosita, K., Jr. Spatiotemporal relationships among early events of fertilization in sea urchin eggs revealed by multiview microscopy, 739
Suzuki, N. *See* Miyata, Yoshikawa, Hakozaki, Suzuki, Furuno, Ikegami, Kinosita, Nishizaka, and Ishiwata.
Svensson, A. *See* Bordas, Lowy, Svensson, Harries, Diakun, andy, Miles, Mant, and Towns-Andrews.
Svoboda, K., Mitra, P. P., and Block, S. M. Fluctuation analysis of kinesin movement, 69s
Svoboda, K. *See* Block and Svoboda.
Sweeney, H. L. Function of the N terminus of the myosin essential light chain of vertebrate striated muscle, 112s
——— *See* Levine, Kensler, Yang, and Sweeney.
Szabó, G., Jr., Weaver, J. L., Pine, P. S., Rao, P. E., and Aszalos, A. Cross-linking of CD4 in a TCR/CD3-juxtaposed inhibitory state: A pFRET study, 1170
Szczesna, D. *See* Fajer, Szczesna, and Li.
Szent-Györgyi, A. G. *See* Roopnarine, Szent-Györgyi, and Thomas.
Szmacinski, H. *See* Terpetschnig, Szmacinski, Malak, and Lakowicz.

T

Takahashi, H. *See* Adachi, Takahashi, Ohki, and Hatta.
——— *See* Quinn, Takahashi, and Hatta.
Takayama, S.-i. and Fujime, S. Dynamic light scattering study of the effect of Mg^{2+} and ATP on synthetic myosin filaments, 609
Takezawa, Y. *See* Sugimoto, Tokunaga, Takezawa, Ikebe, and Wakabayashi.
Tanaka, Y. *See* Suzuki, Tanaka, Nakajima, Hirano, Itoh, Miyata, Hayakawa, and Kinosita.
Tang, D., Van Der Meer, B. W., and Chen, S.-Y. S. Evidence for a regular distribution of cholesterol in phospholipid bilayers from diphenylhexatriene fluorescence, 1944
Tanke, H. J. *See* Song, Hennink, Young, and Tanke.
Tarahovsky, Y. S., Khusainov, A. A., Daugelavichus, R., and Bakene, E. Structural changes in *Escherichia coli* membranes induced by bacteriophage T4 at different temperatures, 157
Tarasiuk, A., Bar-Shimon, M., Gheber, L., Korngreen, A., Grossman, Y., and Priel, Z. Extracellular ATP induces hyperpolarization and motility stimulation of ciliary cells, 1163
Tawada, K., Imafuku, Y., and Toyoshima, Y. Y. A single-track fluctuation analysis in the sliding movement by protein motors in vitro, 68s
Tenchov, B. G. *See* Koynova, Tenchov, Todinova, and Quinn.
Terpetschnig, E., Szmacinski, H., Malak, H., and Lakowicz, J. R. Metal-ligand complexes as a new class of long-lived fluorophores for protein hydrodynamics, 342
Tesi, C. *See* Colomo, Piroddi, Poggesi, and Tesi.
Tetreau, C. *See* Yedgar, Tetreau, Gavish, and Lavalette.
Thevenin, B. J.-M. *See* Zimet, Thevenin, Verkman, Shohet, and Abney.
Thirlwell, H. *See* Piazzesi, Lombardi, Ferenczi, Thirlwell, Dobbie, and Irving.
Thoden, J. *See* Fisher, Smith, Thoden, Smith, Sutoh, Holden, and Rayment.
Thomas, D. D., Ramachandran, S., Roopnarine, O., Hayden, D. W., and Ostap, E. M. The mechanism of force generation in myosin: A disorder-to-order transition, coupled to internal structural changes, 135s
Thomas, D. D. *See* Bell, Matta, Thomas, and Goldman.
——— *See* Fajer, Ostap, Thomas, Naber, Cooke, and Fajer.
——— *See* Karon, Geddis, Kutchai, and Thomas.
——— *See* Mersol, Kutchai, Mahaney, and Thomas.
——— *See* Ostap and Thomas.
——— *See* Prochniewicz, Zhang, Janmey, and Thomas.
——— *See* Roopnarine, Szent-Györgyi, and Thomas.
——— **D.** *See* Roopnarine and Thomas.
——— *See* Voss, Mahaney, Jones, and Thomas.
Thomas, G. J., Jr., Benevides, J. M., Overman, S. A., Ueda, T., Ushizawa, K., Saitoh, M., and Tsubi, M. Polarized raman spectra of oriented fibers of a DNA: Anisotropic and isotropic local Raman tensors of base and backbone vibrations, 1073
Thomas, G. J., Jr. *See* Russell, Vohnik, and Thomas.

Thomas, P. J. *See* Robinson, Richards, Thomas, and Hann.
Thompson, T. E. *See* Clerc and Thompson.
Thorpe, W. P., Toner, M., Ezzell, R. M., Tompkins, R. G., and Yarmush, M. L. Dynamics of photoinduced cell plasma membrane injury, 2198
Tilton, R. D. *See* Robeson and Tilton.
Tinker, A. and Williams, A. J. Measuring the length of the pore of the sheep cardiac sarcoplasmic reticulum calcium-release channel using related trimethylammonium ions as molecular calipers, 111
Tirion, M. M., ben-Avraham, D., Lorenz, M., and Holmes, K. C. Normal modes as refinement parameters for the F-actin model, 5
Tirion, M. M. *See* ben-Avraham and Tirion.
Titus, M. A., Novak, K. D., Hanes, G. P., and Urioste, A. S. Molecular genetic analysis of myoF, a new dictyostelium myosin 1 gene, 152s
Todinova, S. *See* Koynova, Tenchov, Todinova, and Quinn.
Tokunaga, M. *See* Sugimoto, Tokunaga, Takezawa, Ikebe, and Wakabayashi.
Tollin, G. *See* Salamon, Meyer, and Tollin.
Tomaselli, G. F., Chiamvimonvat, N., Nuss, H. B., Balser, J. R., Pérez-García, M. T., Kluge, K., Orias, D. W., Backx, P. H., and Marban, E. A mutation in the pore of the sodium channel alters gating, 1814
Tompkins, R. G. *See* Bischof, Padanilam, Holmes, Ezzell, Lee, Tompkins, Yarmush, and Toner.
——— *See* Thorpe, Toner, Ezzell, Tompkins, and Yarmush.
Toner, M. *See* Bischof, Padanilam, Holmes, Ezzell, Lee, Tompkins, Yarmush, and Toner.
——— *See* Thorpe, Toner, Ezzell, Tompkins, and Yarmush.
Török, K. *See* Linari, Dobbie, Vanzi, Török, Irving, Piazzesi, and Lombardi.
Torres, J. and Padrós, E. Spectroscopic studies of bacteriorhodopsin fragments dissolved in organic solution, 2049
Towns-Andrews, E. *See* Bordas, Lowy, Svensson, Harries, Diakun, Gandy, Miles, Mant, and Towns-Andrews.
Toyoshima, Y. Y. *See* Tawada, Imafuku, and Toyoshima.
Tran, V. T. *See* Allison and Tran.
Travers, F. *See* Lionne, Hermann, Travers, and Barman.
Tregear, R. T. *See* Molloy, Burns, Sparrow, Tregear, Kendrick-Jones, and White.
Trentham, D. R. *See* Berger, Craik, Trentham, Corrie, and Goldman.
——— *See* Ferenczi, He, Chillingworth, Brune, Corrie, Trentham, and Webb.
——— *See* Wootten, Corrie, Capiod, Feeney, Trentham, and Ogden.
Trinick, J. *See* Walker, Trinick, and White.
Trissl, H.-W. *See* Lavergne and Trissl.
Tromberg, B. J. *See* Liu, Cheng, Sonek, Berns, Chapman, and Tromberg.
Trussell, L. O. *See* Raman and Trussell.
Trybus, K. M. *See* Lowey and Trybus.
——— *See* VanBuren, Waller, Harris, Trybus, Warshaw, and Lowey.
Tsong, T. Y. *See* Marszalek and Tsong.
Tsubi, M. *See* Thomas, Benevides, Overman, Ueda, Ushizawa, Saitoh, and Tsubi.
Tu, L. W., Santarelli, V., and Deutsch, C. Truncated K^+ channel DNA sequences specifically suppress lymphocyte K^+ channel gene expression, 147
Tucker, C. K. and Goldstein, L. S. B. Mapping the microtubule binding site on kinesin, 354s
Tung, L. *See* Neunlist and Tung.
Typke, D. *See* Dierksen, Typke, Hegerl, Walz, Sackmann, and Baumeister.
Tyson, R. *See* Woodward, Tyson, Myerscough, Murray, Budrene, and Berg.

U

Ubbink, J. and Odijkt, T. Polymer-and-salt induced toroids of hexagonal DNA, 54
Ueda, T. *See* Thomas, Benevides, Overman, Ueda, Ushizawa, Saitoh, and Tsubi.
Ulyanov, N. B., Schmitz, U., Kumar, A., and James, T. L. Probability assessment of conformational ensembles: Sugar repuckering in a DNA duplex in solution, 13
Unger, V. M. and Schertler, G. F. X. Low resolution structure of bovine rhodopsin determined by electron cryo-microscopy, 1776
Urioste, A. S. *See* Titus, Novak, Hanes, and Urioste.
Ushizawa, K. *See* Thomas, Benevides, Overman, Ueda, Ushizawa, Saitoh, and Tsubi.

V

Valdivia, H. H. *See* O'Brien, Valdivia, and Block.
Vale, R. D. *See* Coppin, Finer, Spudich, and Vale.
van Brederode, M. E., Gensch, T., Hoff, W. D., Hellingwerf, K. J., and Braslavsky, S. E. Photoinduced volume change and energy storage associated with the early transformations of the photoactive yellow protein from *Ectothiorhodospira halopila*, 1101
van den Bergh, V., Boens, N., De Schryver, F. C., Ameloot, M., Steels, P., Gallay, J., Vincent, M., and Kowalczyk, A. Photophysics of the fluorescent Ca^{2+} indicator Fura-2, 1110
Van Der Meer, B. W. *See* Tang, Van Der Meer, and Chen.
van Grondelle, R. *See* Groot, Peterman, van Stokkum, Dekker, and van Grondelle.
van Stokkum, I. H. M. *See* Groot, Peterman, van Stokkum, Dekker, and van Grondelle.
VanBuren, P., Guilford, W. H., Kennedy, G., Wu, J., and Warshaw, D. M. Smooth muscle myosin: A high force-generating molecular motor, 256s
VanBuren, P., Waller, G., Harris, D., Trybus, K., Warshaw, D., and Lowey, S. The essential light chain is required for full force production in skeletal muscle myosin, 345s
VanBuren, P. *See* Peterson, Alpert, VanBuren, Harris, and Warshaw.
Vanderkooi, J. M. *See* Angiolillo and Vanderkooi.
Vanzi, F., Piazzesi, G., Linari, M., Reconditi, M., and Lombardi, V. An analysis of the tension transient after a step stretch imposed during an isometric tetanus, 370s
Vanzi, F. *See* Linari, Dobbie, Vanzi, Török, Irving, Piazzesi, and Lombardi.
Váró, G., Zimányi, L., Fan, X., Sun, L., Needleman, R., and Lanyi, J. K. Photocycle of halorhodopsin from *Halobacterium salinarium*, 2062
Vavasour, I. *See* Lu, Vavasour, and Morrow.
Verkleij, A. J. *See* Starink, Humbel, and Verkleij.
Verkman, A. S. *See* Farinas, Simanek, and Verkman.
——— *See* Zimet, Thevenin, Verkman, Shohet, and Abney.
Villarroel, A., Burnashev, N., and Sakmann, B. Dimensions of the narrow portion of a recombinant NMDA receptor channel, 866
Vincent, M. *See* Meuwis, Boens, De Schryver, Gallay, and Vincent.
——— *See* van den Bergh, Boens, De Schryver, Ameloot, Steels, Gallay, Vincent, and Kowalczyk.
Viswanathan, R. *See* Hui, Viswanathan, Zasadzinski, and Israelachvili.
Vix, A. and Lami, H. Protein fluorescence decay: Discrete components or distribution of lifetimes? Really no way out of the dilemma? 1145

Vohnik, S. *See* Russell, Vohnik, and Thomas.
Volke, F. and Pampel, A. Membrane hydration and structure on a subnanometer scale as seen by high resolution solid state nuclear magnetic resonance POPC and POPC/C_{12} EO_4 model membranes, 1960
Voss, J. C., Mahaney, J. E., Jones, L. R., and Thomas, D. D. Molecular dynamics in mouse atrial tumor sarcoplasmic reticulum, 1787

W

Wachtel, E. *See* Sömjen, Lipka, Schulthess, Koch, Wachtel, Gilat, and Hauser.
Wakabayashi, K. *See* Iwamoto, Kobayashi, Amemiya, and Wakabayashi.
——— *See* Sugimoto, Tokunaga, Takezawa, Ikebe, and Wakabayashi.
Walker, M., Trinick, J., and White, H. Millisecond time-resolution electron cryomicroscopy of the M-ATP transient kinetic state of the acto-myosin ATPase, 87s
Waller, G. *See* VanBuren, Waller, Harris, Trybus, Warshaw, and Lowey.
Wallimann, T. *See* Kraft, Messerli, Rutishauser, Wallimann, Perriard, Chalovich, and Brenner.
Wallraff, E. *See* Schindl, Wallraff, Deubzer, Witke, Gerisch, and Sackmann.
Walz, J. *See* Dierksen, Typke, Hegerl, Walz, Sackmann, and Baumeister.
Wang, X. F. *See* Gordon, Chazotte, Wang, and Herman.
Wang, Z., Khan, S., and Sheetz, M. P. Different patterns of kinesin and cytoplasmic dynein movement: A single mechanism, 328s
Wang, Z. *See* Chacko, Sosinski, and Wang.
Warshaw, D. M. *See* Peterson, Alpert, VanBuren, Harris, and Warshaw.
——— *See* VanBuren, Guilford, Kennedy, Wu, and Warshaw.
——— *See* VanBuren, Waller, Harris, Trybus, Warshaw, and Lowey.
Weaver, J. C. *See* Chizmadzhev, Zarnitsin, Weaver, and Potts.
——— *See* Prausnitz, Corbett, Gimm, Golan, Langer, and Weaver.
Weaver, J. L. *See* Szabó, Weaver, Pine, Rao, and Aszalos.
Webb, M. R. *See* Ferenczi, He, Chillingworth, Brune, Corrie, Trentham, and Webb.
——— *See* Gilbert, Webb, Brune, and Johnson.
Weingart, R. *See* Bukauskas, Elfgang, Willecke, and Weingart.
Weisel, J. W. *See* Baradet, Haselgrove, and Weisel.
Wess, T. J. *See* Hulmes, Wess, Prockop, and Fratzl.
White, D. C. S. *See* Molloy, Burns, Sparrow, Tregear, Kendrick-Jones, and White.
White, H. *See* Walker, Trinick, and White.
White, P. *See* Miller, Cheung, White, and Reister.
Wightman, R. M., Schroeder, T. J., Finnegan, J. M., Ciolkowski, E. L., and Pihel, K. Time course of release of catecholamines from individual vesicles during exocytosis at adrenal medullary cells, 383
Willecke, K. *See* Bukauskas, Elfgang, Willecke, and Weingart.
Williams, A. J. *See* Tinker and Williams.
Wilson, G. J., Shull, S. E., and Cooke, R. Inhibition of muscle force by vanadate, 216
Wilson, P. W. and Leader, J. P. Stabilization of supercooled fluids by thermal hysteresis proteins, 2098
Winkelmann, D. A., Bourdieu, L., Kinose, F., and Libchaber, A. Motility assays using myosin attached to surfaces through specific binding to monoclonal antibodies, 72s
Winkelmann, D. A., Bourdieu, L., Ott, A., Kinose, F., and Libchaber, A. Flexibility of myosin attachment to surfaces influences F-actin motion, 2444
Winter, R. *See* Czeslik, Winter, Rapp, and Bartels.
Witke, W. *See* Schindl, Wallraff, Deubzer, Witke, Gerisch, and Sackmann.
Wittenberg, B. A. *See* Jelicks and Wittenberg.
Wong, O. K. *See* Gelles, Yin, Finzi, Wong, and Landick.
Woodward, D. E., Tyson, R., Myerscough, M. R., Murray, J. D., Budrene, E. O., and Berg, H. C. Spatio-temporal patterns generated by *Salmonella typhimurium*, 2181
Woodward, S. K. A. and Manstein, D. J. Over-expression, purification and kinetic characterization of the catalytic domain of dictyostelium discoideum myosin, 326s
Wootten, J. F., Corrie, J. E. T., Capiod, T., Feeney, J., Trentham, D. R., and Ogden, D. C. Kinetics of cystolic Ca^{2+} concentration following photolytic release of 1-d-*myo*-inositol 1, 4-bisphosphate, 5-phosphorothioate from a caged derivative in guinea pig hepatocytes, 2601
Worthington, C. R. *See* Elliott and Worthington.
Wrede, P. *See* Schneider, Schuchhardt, and Wrede.
Wriggers, W., Jones, R., Schulten, K., and Keller, D. Conformational differences in ATP- and ADP-bound G-actin: A molecular dynamics study, 365s
Wu, J. *See* VanBuren, Guilford, Kennedy, Wu, and Warshaw.
Wu, Y., He, K., Ludtke, S. J., and Huang, H. W. X-ray diffraction study of lipid bilayer membranes interacting with amphiphilic helical peptides: Diphytanoyl phosphatidylcholine with alamethicin at low concentrations, 2361

X

Xiong, J. *See* Keener, Fullerton, Cameron, and Xiong.

Y

Yager, P. *See* Osborn and Yager.
Yamada, K. and Fjuita, S. Labeling of myosin with a fluorescent analog of ATP and the fluorescence transients after photolysis of caged nucleotides in skeletal muscle fibers, 331s
Yanagida, T. and Ishijima, A. Forces and steps generated by single myosin molecules, 312s
Yanagida, T. *See* Ishijima and Yanagida.
Yang, Z. *See* Levine, Kensler, Yang, and Sweeney.
Yarmush, M. L. *See* Bischof, Padanilam, Holmes, Ezzell, Lee, Tompkins, Yarmush, and Toner.
——— *See* Thorpe, Toner, Ezzell, Tompkins, and Yarmush.
Yasuda, K., Anazawa, T., and Ishiwata, S. Microscopic analysis of the elastic properties of nebulin in skeletal myofibrils, 598
Yau, K. W. *See* Koutalos, Nakatani, and Yau.
Yedgar, S., Tetreau, C., Gavish, B., and Lavalette, D. Viscosity dependence of O_2 escape from respiratory proteins as a function of cosolvent molecular weight, 665
Yeh, Y. *See* Hall, Cole, Yeh, Scholey, and Baskin.
Yin, H. *See* Gelles, Yin, Finzi, Wong, and Landick.
Yool, A. J. and Schwarz, T. L. Interactions of the H5 pore region and hydroxylamine with N-type inactivation in the *Shaker* K^+ channel, 448
Yoshikawa, H. *See* Miyata, Yoshikawa, Hakozaki, Suzuki, Furuno, Ikegami, Kinosita, Nishizaka, and Ishiwata.
——— *See* Nishizaka, Miyata, Yoshikawa, Ishiwata, and Kinosita.
Young, E. C. *See* Gelles, Berliner, Young, Mahtani, Perez-Ramirez, and Anderson.
Young, I. T. *See* Song, Hennink, Young, and Tanke.
Young, M. A., Ravishanker, G., Beveridge, D. L., and Berman, H. M. Analysis of local helix bending in crystal structures of DNA oligonucleotides and DNA-protein complexes, 2454
Yount, R. G., Lawson, J. D., and Rayment, I. Is Myosin a "Back Door" Enzyme? 44s
Yu, L. C. *See* Brenner, Chalovich, and Yu.
——— *See* Kraft, Chalovich, Yu, and Brenner.

——— *See* Malinchik and Yu.
Yuzawa, T. *See* Sasaki, Yuzawa, Kandori, Maeda, and Hamaguchi.

Z

Zaner, K. S. Physics of actin networks. I. Rheology of semi-dilute F-actin, 1019
Zapata, D. J. *See* Eden, Luu, Zapata, Sablin, and Kull.
Zarnitsin, V. G. *See* Chizmadzhev, Zarnitsin, Weaver, and Potts.
Zasadzinski, J. A. *See* Hui, Viswanathan, Zasadzinski, and Israelachvili.
Zeng, J. and Chong, P. L.-G. Effect of ethanol-induced lipid interdigitation on the membrane solubility of Prodan, Acdan, and Laurdan, 567
Zeng, J. and Rudy, Y. Early afterdepolarizations in cardiac myocytes: mechanism and rate dependence, 949
Zhang, H. and Bryant, R. G. Characterization of enzyme-bound ligand dynamics by solid-state NMR in the presence of ligand exchange: L-phenylalanine on carboxypeptidase A, 303
——— Nuclear magnetic resonance spectra for 1>1 spins in dynamically heterogeneous systems with chemical exchange among environments, 2556
Zhang, H.-J. *See* Körz, Zöhlke, Zhang, and Joho.
Zhang, J. W. *See* Mauzerall, Gunner, and Zhang.
Zhang, Q. *See* Prochniewicz, Zhang, Janmey, and Thomas.
Zhang, Y.-P., Lewis, R. N. A. H., Hodges, R. S., and McElhaney, R. N. Interaction of a peptide model of a hydrophobic transmembrane α-helical segment of a membrane protein with phosphatidylethanolamine bilayers: Differential scanning calorimetric and Fourier transform infrared spectroscopic studies, 847
Zhao, L., Gollub, J., and Cooke, R. Orientation of paramagnetic probes attached to gizzard light chain-2 exchanged onto myosin heads of rabbit skeletal muscles, 363s
Zhao, L., Naber, N., and Cooke, R. Muscle cross-bridges bound to actin are disordered in the presence of 2,3-butanedione monoxime, 1980
Zhao, L., Pate, E., Baker, A., and Cooke, R. The myosin catalytic domain does not rotate during the powerstroke, 362s
Zhao, R. *See* Stahlberg, Schuster, Bauer, Baeuerlein, Zhao, Reese, and Khan.
Zhao, Y. and Kawai, M. The hydrophobic interaction between actin and myosin underlies the mechanism of force generation by cross-bridges, 332s
Zhao, Y. *See* Kawai and Zhao.
——— *See* Raucher, Fajer, Sar, Hideg, Zhao, Kawai, and Fajer.
Zhelev, D. V. and Hochmuth, R. M. Mechanically stimulated cytoskeleton rearrangement and cortical contraction in human neutrophils, 2004
Zidanic, M. and Fuchs, P. A. Kinetic analysis of barium currents in chick cochlear hair cells, 1323
Zimanyi, L. *See* Nagle, Zimanyi, and Lanyi.
Zimányi, L. *See* Váró, Zimányi, Fan, Sun, Needleman, and Lanyi.
Zimet, D. B., Thevenin, B. J.-M., Verkman, A. S., Shohet, S. B., and Abney, J. R. Calculation of resonance energy transfer in crowded biological membranes, 1592
Zöhlke, R. D. *See* Körz, Zöhlke, Zhang, and Joho.
Zorec, R. *See* Graf, Rupnik, Zupancic, and Zorec.
Zouni, A. *See* Clarke, Zouni, and Holzwarth.
Zundel, G. *See* Bartl, Deckers-Hebestreit, Altendorf, and Zundel.
Zupancic, G. *See* Graf, Rupnik, Zupancic, and Zorec.

SUBJECT INDEX

A

Acdan, membrane solubility of, ethanol-induced lipid interdigitation and, 567
Acetylcholine receptor
calcium flux through, 501
nicotinic, hippocampal, calcium permeability of, 516
Acetylcholinesterase, diffusional encounter rate constants of, 62
Ac-(LSSLLSL)$_3$, charge selectivity of, 1347
Acrosomal filament, of *Limulus* sperm, 8s
Actin
actomyosin interface and, 50s
ATP- and ADP-bound, conformation of, 365s
binding face myosin mutations in, 338s
domain motion in, 330s
dynamic and elastic properties of, 1231
filament of
motility of, 70s, 306s
tropomyosin and, 347s, 353s
myosin binding to
in force generation, 194s
motility and, 2444
myosin head binding to, 325s
2,3-butanedione monoxime and, 1980
normal mode refinement of, 5
rotational dynamics and sliding and, 341s
sulfhydryl reactivity in, 367s
Actin:profilin crystals, structural transitions of, 12s
Actin-myosin interaction, 35s, 291s, 298s
control of, 348s
cross-bridge force generation and, 332s
in filament sliding, 333s
filter electron microscopy of, 349s
sliding, actin chemical modification and, 341s
tropomyosin and, 2s
Actin-myosin interface, actin and, 50s
Actin-tropomyosin gel, thin filament on, 347s
Actomyosin, kinetics and in vitro motility of, 1991
Actomyosin ATPase, time-resolved electron microscopy of, 87s
Actomyosin cross-bridge cycle, model of, 351s
Actomyosin motor
chemomechanical coupling in, 355s
force of, measurement of, 286s
Acyl chain, orientational order parameter profiles in, 574
Acylglycerides, phase behavior of, 1423
Acylglycerols, crystalline, molecular organization and motions of, 1383
Adenine nucleotide, binding of, to Rep helicase, 340s
Adenosine di- and triphosphate, actin bound to, conformation of, 365s
Adenosine triphosphatase, in muscle fiber
inorganic phosphate and, 350s
myofibril as model for, 217s
Adenosine triphosphate
cargo-activated, in kinesin, 283s
ciliary cell hyperpolarization and motility stimulation and, 1163
hydrolysis of
molecular motor and, 219s
myosin dynamics and orientation in, 335s
myosin filament and, 609
Adenosine triphosphate analog
myosin head in, 322s
myosin labeled with, in skeletal muscle, 331s
Adenosine triphosphate receptor, calcium flux through, 501
Adenosine triphosphate synthase, F0 complex of, protein conduction in, 104
Agarose gel
diffusion of, charge effects in, 1561
mesoscopic, in water, 1569
Aggregates, circular, excitation dynamics in, 1089
Alanine-lysine peptides, folding simulations of, 826
Alcohol-phospholipid systems, interdigitated structure of, 1850
α-Amino-3-hydroxy-5-methyl-4-isoxazolepropionate receptor, desensitization of, after glutamate removal, 137
Amino acids, nonideality of, molecular characteristics and, 291
Amino acid titration, electrostatic calculations of, 2233
AMPA, *See* α-Amino-3-hydroxy-5-methyl-4-isoxazolepropionate
Anion-selective channel, voltage-dependent, of yeast mitochondria, multiple conductance channel activity of, 2299
Anisotropy, during myocardial stimulation, 2310
Anisotropy probes, 342
Antibody-antigen association, computer modeling of, 807
Aqueous/lipid interface, conformation at, 351
Aspartate, in voltage-gated potassium channel, 1804
Atomic force microscopy
anchoring round shaped cells for, 1678
of biomolecule arrays, 1653
of collagen sequential assembly, 2124
of DNA, 1672
of myosin molecule, 1604
phospholipid bilayers by, 171
polysaccharide helices in, 3, 360
of purple membranes in aqueous solutions, 1681
Atrial tumor, sarcoplasmic reticulum of, molecular dynamics of, 1787
Avidin, crystallization of, 2493

B

Bacteria
conserved flagellar motor machinery of, 168s
purple photosynthetic, excitation dymanics in, 1089
spatio-temporal patterns generated by, 2181
Bacterial chemotaxis, excitation and adaptation in, 708
Bacterial migration, in porous media, 800
Bacterial polysaccharide acetan, helical structure of, atomic force microscopy of, 360
Bacteriophage M13, two-dimensional exchange ^{31}P NMR spectroscopy of, 1128
Bacteriophage T4, *E. coli* changes induced by, 157
Bacteriorhodopsin
bR548, photocycle of, 1270
functional interactions in, 25
in organic solution, spectroscopic studies of, 2049
photocycle of
K species in, 2073
kinetics of, 1490
proton release in, 1518
rapid pH change and, 1507
Bile, cholesterol crystallization from, 2342
Biological membrane, energy transfer in, 1592
Biomembrane, order parameters in, 1727
Biomolecule arrays, atomic force microscopy of, 1653
Bond order parametes, in biomembranes, 1727
Book reviews, 391, 1634, 2207
Books received, 2622
α-Bungarotoxin-sensitive hippocampal nicotinic acetylcholine receptor, calcium permeability of, 516
2,3-Butanedione monoxime, actin-bound myosin heads and, 1980

C

Cable properties, sealing measures and, 795
Calcium
activation of, psoas muscle fiber tension transients and, 339s
caged, flash photolysis of, ryanodine receptor activation by, 946
cytosolic
cell motility and, 1207
mobilization of, CD2 diffusion and, 459
oscillations of, in sympathetic neurons, 1752
release of, by photolysis of inositol bisphosphate phosphorothioate, 2601
resting, in cardiac myocyte, 1453
muscle force transients and, 235
phosphatidylserine fusion and, diacylglycerol and, 558
phosphatidylserine interaction with, neutral lipid dehydration and, 1009
release of, from skeletal muscle, luminal calcium and, 507
Calcium ATPase, crystals of, 1152
Calcium flux, through NMDA, ATP, and acetylcholine receptor channels, 501
Calcium ion, myosin head in, 322s
Calcium oscillation detectors, 1621
Calcium permeability, of hippocampal nicotinic acetylcholine receptor, 516
Calcium pump, thapsigargin and, 298
Calcium release-activated current, islet electrical activity and, 2323
Calcium release channel, in cardiac sarcoplasmic reticulum, pore length of, 111
Calcium transients, in cerebellar granule cell presynaptic terminals, 2156
Calcium wave, temperature dependence of, 40
Caldesmon
binding of, to smooth muscle thin filament, 2419
effect of, on force and stiffness, 2404
smooth muscle myosin regulation by, 342s
Carbon monoxide-hemoglobin kinetics, nanosecond optical rotatory dispersion spectroscopy of, 326
Carbonmonoxy myoglobins, distal mutants of, molecular dynamics of, 1283
Carboxypeptidase A, phenylalanine and, 303
Cardiac muscle, passive tension in, 1027
Cardiac myocyte
after depolarizations in, 949
calcium wave properties in, temperature dependence of, 40
Indo-1 and resting intracellular calcium in, 1453
myosin-induced thin filament activation in, 1430
sarcoplasmic reticulum of
calcium release from, 2015
halothane and lidocaine effects on, 936
Catalase, compound I intermediates of, structure/spectra of, 69
Catecholamine, release of, from vesicles, timing of, 363
CD2 diffusion, intracellular mediators and, 459
CD4, cross-linking of, in TCR/CD3-juxtaposed inhibitory state, 1170
Cell
localized heating of, 2137
round shaped, anchoring of, for atomic force microscopy, 1678
Cell fission, electric field-induced, 1218
Cell membrane, permeability of, temperature and, 2608
Cell motility
intracellular calcium level and, 1207
membrane protein and, 214s
voltage dependence of, membrane tension and, 2190
Cell plasma membrane, photoinduced injury of, 2198
Cell structure, diffusion and reaction in, Monte Carlo simulation of, 1716
Cell-substrate interaction, quantitative reflection interference contrast microscopy of, 1177
Cell surface, soft touch on, 2215
Cell volume, total internal reflection microfluorimetry of, 1613
Cell wall, in pressure response, 702
Cerebellar granule cell, presynaptic terminals of, calcium transients in, 2156
Channel gating
of muscle nicotinic receptor, 483
voltage-independent, potassium, 491
Channel stabilization, formamidinium-induced, gramicidin tryptophans and, 2271
Chlorophyll *a*, resonance light scattering spectroscopy of, 335
Cholesterol
concentration of, phospholipid bilayers and, 1895
dimyristoylphosphatidylcholine interactions with, 1952
distribution of, in phospholipid bilayers, 1944
from bile, crystallization of, 2342
lipid bilayers in, 164, 179, 978
Cholesterol-DPPC bilayers, melittin and, 965
Cholesteryl ester mixtures, phase behavior and crystalline structures of, 2376
Ciliary beat, dynein light chain phosphorylation and, 222s
Ciliary cells, hyperpolarization and motility stimulation of, ATP and, 1163
Circular aggregates, excitation dynamics in, 1089
Collagen
cardiac muscle passive tension and, 1027
sequential assembly of, atomic force microscopy of, 2124
Collagen fibrils, radial packing, order, and disorder in, 1661
Computer modeling, of antibody-antigen association, 807
Confinement, macromolecular structure and reactivity and, 1311
Connexon gap junction
channels of
behavior of, prediction of, 1796
biophysical properties of, 2289
reconstitution of, into lipid bilayer, 1767
Correlation spectroscopy, two-photon fluorescence, 694
Cortical contraction, in neutrophils, 2004
CP47 antenna complex, triplet and fluorescing states of, 261
C-phycocyanin, spectra of, deconvolution of, 1500
Cross-bridge, *See* Myosin head
Cross-bridge cycle
of actomyosin, model of, 351s
EPR spin label and, 128s
muscle mechanical and enzyme properties and, 356s
muscular
kinetics of, 360s
ligand release and, 215s
myocardial, in papillary muscle, 346s
Cross-bridge elasticity, of myosin, 372s
Cross-bridge model, of muscle shortening, 1966
Cysteine-scanning mutagenesis, potassium channel side chain accessibility after, 900
Cytidylyl(-3′,5′)-guanosine, vibrational circular dichroism of, 1045
Cytochrome *c*, total internal reflection fluorescence on, 2573
Cytochrome *c* proton pump, thermodynamics of, 2543
Cytochrome P-450$_{cam}$ spin transition, hydrostatic and osmotic pressure and, 2056
Cytoskeleton, rearrangement of, in neutrophils, 2004

D

Deoxyribonucleic acid, transcription of, kinetics of, 73s
atomic force microscopy of, 1672
conformation of, rotation models of, 1472
cross-linked lexitropsin groove binding to, 2041
hexagonal, toroids of, 54

local helix bending of, 2454
motor proteins of, energy coupling by, 180s
octomer, in solution, flexibility of, 13
oligomeric, sodium accumulation near, 1063
polarized Raman spectra of, 1073
supercoiling free energies of, 619
superhelical, bends in, 81
three-way junctions in
helical stacking in, 251
structure refinement of, 266
Deoxyribonucleic acid-binding domain, of glucocorticoid receptor, molecular dynamics simulations of, 402
Deoxyribonucleic acid-netropsin fibers, mechanochemical study of, 1050
Deoxyribonucleic acid oligomer, oligocation binding to, Monte Carlo study of, 634
Diacylglycerol, calcium-induced phosphatidylserine fusion and, 558
Diacylphosphatidylcholine, metastable subgel phase in, 2370
Diamide, platelet activation and, 364
Dictyostelium
cell-substrate interactions in, quantitative reflection interference contrast microscopy of, 1177
myoF gene in, 152s
myosin in, catalytic domain of, 326s
Diffusion, cell surface reversible reactions and, 1222
Dimethyldodecylamine oxide/gramicidin D/water system, phase equilibria in, 547
Dimyristoylphosphatidylcholine, cholesterol interactions with, 1952
Dimyristoylphosphatidylcholine/dipalmitoylphosphatidylcholine bilayer membranes, two-phase permeation of, 2333
Dimyristoylphosphatidylcholine-distearoylphosphatidylcholine mixture, order parameter profiles of, 574
Dinucleotides, vibrational circular dichroism of, 1045
Dipalmitoylphosphatidylcholine-diacylglycerol complexes, characterization of, 1374
Dipalmitoylphosphatidylcholine multilayers, chain dynamics and local diffusion in, 1871
Dipalmitoylphosphocholine, order and dynamics of, 1137
Dipalmitoylphosphocholine-cholesterol bilayers, melittin and, 965
Diphytanoyl phosphatidylcholine-alamethicin, lipid bilayer membrane interaction with, 2361
Dopamine, diffusion and Michaelis-Menten uptake of, after iontophoresis, in striatum, 1699
DPPC, *See* Dipalmitoylphosphocholine
Dynein, cytoplasmic
movement patterns in, 328s
phosphorylation of, 226s
Dynein light chain, phosphorylation of
ciliary beat and, 222s
microtubule translocation and, 323s

E

***Ectothiorhodospira halophila*,** yellow protein from
lipid bilayer binding to, 648
photoinduced volume change and energy storage in, 1101
Egg, kinesin-related protein complexes from, 158s
Electrical force, in muscle contraction, 327s
Electric field
cell fission induced by, 1218
lipid monolayer membranes and, 1740
Electroinduced transport, through multilamellar lipid system, 749
Electron paramagnetic resonance spin label, cross-bridge cycle and, 128s
Electron transfer, electrostatic calculations of, 2233
Electrophoretic mobility, of protein, 1120
Electroporation pulse, transport measurement after, 1864
Electrostatic calculations, in reaction center, 2233
Electrostatic potential, adjacent to phospholipid bilayers, 729
Embryo, kinesin-related protein complexes from, 158s
Energy, parceling of, in muscle contraction, 324s
Energy coupling, by DNA motor proteins, 180s
Energy transfer, in biological membranes, 1592
Erythrocyte, *See also* red cell
hemoglobin oxygenation in, 681
membrane of, band 3 proteins in, rotational mobility of, glycophorin A antibodies and, 1881
Escherichia coli
ATP synthase of, protein conduction in, 104
bacteriophage T4-induced changes in, 157
Ethanol, lipid interdigitation and, 567
Excitation dynamics, in circular aggregates, 1089
Exocytosis, volume regulation and, 1359
Exocytotic release, time course of, 383

F

Fatty acids, in phospholipid bilayers, cholesterol and, 179
Fertilization transients, simultaneous imaging of, 739
Fibrin clots, three-dimensional reconstruction of, 1551
Filament
of actin
motility of, 70s, 306s
tropomyosin and, 347s, 353s
sliding of, actin-myosin interaction in, 333s
of smooth muscle, caldesmon binding to, 2419
unsaturated, actin-myosin interaction in, 35s
Flagellar motor
bacterial, conserved machinery of, 168s
torque generation by, 163s
Flash photolysis, of caged calcium, ryanodine receptor activation by, 946
Fluorescein, photobleaching of, in microscopy, 2588
Fluorescence
induction of, in photosystem II, 2474
total internal reflection, orientation distribution of, 2566, 2573
Fluorescence decay, of protein, discrete versus distributed lifetimes of, 1145
Fluorescence energy transfer, in actin, 330s
Fluorescence lifetime, sensing based on, in tissue, 1574
Fluorescence polarization, at muscle fiber, 78s, 81s
Fluorescence recovery, after photobleaching, 766, 2145
Fluorescence spectroscopy, teaching of, 1191
Fluorophores, for protein hydrodynamics, 342
Force
electrical, in muscle contraction, 327s
generation of
actomycin interaction and, 332s
caldesmon and, 2404
by kinesin, 71s, 242s, 245s, 260s
molecular processes and, 106s
by myosin, 135s, 312s
and myosin binding to actin, 194s
by myosin molecule, 312s
in skeletal muscle, myosin light chain and, 345s
tension transients and, in muscle fibers, 2032
motor, of actomyosin, 286s
Force probe, of molecular adhesion and structural linkages, 2580
Force-velocity curves, of kinesin, 366s
Formamidinium, channel stabilization induced by, gramicidin

tryptophans and, 2271
Fura-2, photophysics of, 1110

G

Galactosylceramide/phosphatidylcholine bilayers, macro-ripple phase in, 1396
Gap junction connexons
channels of
behavior of, prediction of, 1796
biophysical properties of, 2289
reconstitution of, into planar lipid bilayers, 1767
Gel, mesoscopic, in water, 1569
Gel diffusion, charge effects in, 1561
Glucocorticoid receptor, DNA-binding domain of, molecular dynamics simulations of, 402
Glutamate, removal of, AMPA desensitation after, 137
Glycophorin A antibodies, membrane protein rotational mobility and, 1881
Gramicidin, sodium in, as permion, 906
Gramicidin channel, single and double occupancy in, 876
Gramicidin D/dimethyldodecylamine oxide/water system, phase equilibria in, 547
Gramicidin tryptophans, formamidinium-induced channel stabilization and, 2271
Granule cell, cerebellar, presynaptic terminals of, calcium transients in, 2156
Growth cone membrane, tether formation of, by laser tweezers, 988
Guanine monophosphate, cyclic, diffusion coefficient of, in rod photoreceptors, 373
Guanylyl(-3′,5′)-cytidine, vibrational circular dichroism of, 1045

H

Hair cell
barium currents in, 1323
motility of, voltage dependence of, membrane tension and, 2190
transduction of, myosin and, 358s
Halorhodopsin, photocycle of, 2062
Halothane, cardiac sarcoplasmic reticulum and, 936
Heart
red cell-perfused, sarcoplasmic oxygenation in, 2129
sarcoplasmic reticulum calcium-release channel in, pore length of, 111
Heavy chain, of nonmuscle myosin, in vertebrate, 334s
Helical stacking, in DNA three-way junctions, 251
Helicase-catalyzed DNA unwinding, 180s
Helicase-primed DNA protein, nucleotide binding studies of, 186s
Helothermine, structure and properties of, 2280
Heme proteins, ligand binding to, 2497
Hemoglobin
electrostatics of, 655
nanosecond ORD study of, 399
oxygenation of, in erythrocytes, 681
Hemoglobin-CO kinetics, nanosecond ORD study of, 326
Hemoglobin solution, thermodynamic analysis of, using scaled particle theory, 835
Hepatocyte, osmotic swelling of, membrane conductance and, 1359
Heteropolymer, collapse of, polymer end motion in, 1694
Homopolymer, collapse of, polymer end motion in, 1694
Horseradish peroxidase, compound I intermediates of, structure/spectra of, 69
Hydrogen bonding, retinal, with water, 25
Hydrostatic pressure, cytochrome P-450$_{cam}$ spin transition and, 2056
Hydroxylamine, *Shaker* potassium channel H5 pore region and, 448

I

Immunogold markers, three-dimensional localization of, 2171
Indo-1, in resting cardiac myocyte, 1453
Inducers, interfacial effects of, 2615
Influenza virus, membrane lysis and, micropipette assay for, 315
Input resistance, cable-like structure sealing as measure of, 795
Ion channel
charge selectivity of, 1347
electrostriction and energentics of, 427
Ion transport, in gramicidin channel, double occupancy and, 876
Islet, pancreatic, *See* Pancreatic islet

K

Kinesin
ATPase activity of, cargo-activated, 283s
dimetric head domains of, processivity of, 267s
force generation by, 71s, 242s, 245s, 260s
force-velocity curves of, 366s
mechanical behavior of, 202s
microtubule-activated ATPase of, pathway of, 173s
microtubule binding site in, 354s
molecules of, optical tweezer stressing of, 74s
motor domain of
nucleotide binding to, 364s
solution structure of, 59s
movement of
fluctuation analysis of, 69s
patterns in, 328s
one- and two-headed derivatives of, 276s
proteins of, motor polarity in, 271s
Kinesin-related protein complexes, in egg and embryo, 158s

L

Langmuir-Blodgett transfer, of phospholipid bilayers, 1364
Laser tweezers, tether formation of growth cone membranes by, 988
Laurdan, membrane solubility of, ethanol-induced lipid interdigitation and, 567
Leukemia cell differentiation, inducer adsorption and, 2615
Lexitropsins, cross-linked, DNA minor groove binding of, 2041
Lidocaine, cardiac sarcoplasmic reticulum and, 936
Ligand binding, to heme proteins, 2497
Ligand-receptor kinetics, 1222
Ligand release, muscle cross-bridge cycle and, 215s
Light chain
dynein, phosphorylation of
ciliary beat and, 222s
microtubule translocation and, 322s
exchange of, onto skeletal muscle myosin head, 363s
of myosin
divalent cation binding to, tension generation and, in muscle fiber, 1443
energy transduction and, in skeletal muscle, 227s
force production and, in skeletal muscle, 345s
in muscle contraction, 337s
myosin function and, 223s
phosphorylation of, myosin head changes and, 224s
in skeletal and smooth muscle, 120s, 227s, 345s
in striated muscle, 112s
Light scattering spectroscopy, of peptide-vesicle binding, 131
***Limulus* sperm,** acrosomal filament of, 8s

Lipid
neutral, phosphatidylserine-calcium interaction and, 1009
of stratum corneum, 196
Lipid/aqueous interface, conformation at, 351
Lipid bilayers, *See also* Phospholipid bilayers
cholesterol in, 164, 179, 978
membranes of, peptide interaction with, 2361
peripheral protein binding to, 536
photoactive yellow protein binding to, 648
reconstitution of β_2 gap junction connexons into, 1767
transport in, after electroporation pulse, 1864
water permeability of, 997
Lipid interdigitation, ethanol-induced, solute partitiioning and, 567
Lipid mixture, orientational order parameter profiles in, 574
Lipid monolayers, electric field gradients and, 1740
Lipid system, multilamellar, electroinduced transport through, 749
Lipid vesicles, ice-embedded, electron tomography of, 1416
Lipoprotein, low density, in vitreous ice, 2115
Low force cross-bridges, phosphate and, 243
Luminal calcium, skeletal muscle calcium release and, 507
Lysozyme, electrophoresis of, 2261

M

Machina, peptide design in, 434
Macromolecular structure and reactivity, confinement and, 1311
Magnesium, myosin filament and, 609
Magnesium-induced self-association, of heavy meromyosin, thermal dependence of, 352s
Malate dehydrogenase, redox-sensitive, 2218
Melittin
DCCP-cholesterol bilayers and, 965
lysis induced by, 187
Membrane
patches of, scanning force microscopy of, 1687
permeability of, after thermal injury, 2608
purple, in aqueous solution, atomic force microscopy of, 1681
surfactin interaction with, 1937
Membrane lysis
melittin-induced, 187
micropipette assay for, 315
Membrane potential, cable-like structure sealing as measure of, 795
Membrane protein
cell motility and, 214s
hydrodynamic interactions and, 1828, 1836
rotational mobility of, glycophorin A antibodies and, 1881
Meromyosin
actin interaction with, 298t
thermally dependent magnesium-induced self-association of, 352s
Methemoglobin, spin-labeled low spin, 2531
Microscope, atomic force, *See* Atomic force microscope
Microtubule
cardiac muscle passive tension and, 1027
translocation of, dynein light chain phosphorylation and, 322s
Microtubule binding site, in kinesin, 354s
Microtubule-kinesin ATPase
kinetics of, 357s
pathway of, 173s
Mitochondria, of yeast, multiple conductance channel activity of, 2299
Molecular adhesion, force probe of, 2580
Molecular motor, ATP hydrolysis and, 219s
Monoclonal antibodies, myosin attachment to, motility assay of, 72s
Monoelaidin, phase behavior of, 1423
Monoolein, phase behavior of, 1423
Monte Carlo study
of bends in superhelical DNA, 81
of diffusion and reaction, in cell structure, 1716
of DNA supercoiling free energies, 619
of oligocation-DNA oligomer binding, 634
Motor protein, *See* Motor protein
Multiple conductance channel activity, of wild-type and voltage-dependent anion-selective channel-less yeast mitochondria, 2299
Muscle
contraction of
electrical forces in, 327s
energy-parceling mechanism of, 324s
myosin regulatory light chains in, 337s
signal transduction in, 336s
surface physics in, 359s
cross-bridge cycle of, ligand release and, 215s
of live frog, myosin heads in, 99s
mechanical and energetic properties of, cross-bridge action and, 356s
nicotinic receptor of, channel changes in, 483
papillary, myocardial cross-bridge events and, 346s
protein motor of, mechanical properties of, 75s
red, oxygen supply to, 1246
shortening of, cross-bridge model of, 1966
skeletal, *See* Skeletal muscle
smooth
myosin heads in, phosphorylation and, 228s
myosin light chain in, 120s
myosin force generation in, 256s
myosin regulation of caldesmon in, 342s
thin filament of, caldesmon binding to, 2419
striated
myosin light chain in, 112s
myosin head changes on, myosin regulatory light chain phosphorylation and, 224s
passive tension in, myofibrils and, 344s
Muscle fiber
ATPase in
inorganic phosphate and, 350s
myofibril as model for, 217s
cross-bridge kinetics in, 360s
equatorial x-ray diffraction patterns from, 2023
fluorescence polarization at, 78s, 81s
N-phenylmaleimide-labeled myosin and, 343s
phosphate release in, time-resolved measurement of, 191s
tension transients in
calcium activation and, 339s
force generation and, 2032
x-ray diffraction of, 92s
Muscle force, vanadate inhibition by, 216
Muscle force transients, calcium and, 235
Myocardial cell, sodium channel in, 121
Myocardial cross-bridge events, in papillary muscle, 346s
Myocardial stimulation, anisotropy during, 2310
Myocyte
cardiac, *See* Cardiac myocyte
ventricular, sarcoplasmic reticulum of, calcium release from, 2015
***myoF* gene,** genetic analysis of, 152s
Myofibril
mechanical studies of, 361s
as model for muscle fiber ATPase, 217s
skeletal, *See* Skeletal myofibrils
and striated muscle passive tension, 344s
Myoglobin

adsorbed on polydimethylsiloxane, conformational alteration of, 2091
nonequilibrium states of, 2524
Myosin:nucleotide complexes, structural studies of, 19s
Myosin
actin binding of
face mutants of, 338s
force generation and, 194s
motility and, 2444
actin interaction with, *See* Actin-myosin interaction
active site of, conformation of, 142s
ATP analog-labeled, in skeletal muscle, 331s
in ATP hydrolysis, dynamics and orientation of, 335s
as back door enzyme, 44s
catalytic domain of
in *Dictyostelium,* 326s
in powerstroke, 362s
cross-bridge elasticity of, 372s
cross-linked under 10S conditions, 369s
force generation by, 135s, 312s
functioning of, light chains and, 223s
hair cell transduction and, 358s
heavy chain of, cysteine in, regulatory light chain linking to, 329s
isoforms of, amino acid insertions in, 225s
light chain of
cross-linking of, to heavy chain cysteine, 329s
energy transduction and, in skeletal muscle, 227s
force production and, in skeletal muscle, 345s
in striated muscle, 112s
phosphorylation of, myosin head changes and, 224s
skeletal muscle tension generation and, 1443
in skeletal and smooth muscle, 120s
monoclonal antibody attachment of, motility assay of, 72s
nonmuscle, heavy chain of, in vertebrate, 334s
N-phenylmaleimide-labeled, muscle fiber and, 343s
of smooth muscle, force generation by, 256s
Myosin cross-bridges, working stroke of, 55s
Myosin filament, magnesium and ATP and, 609
Myosin head
actin-binding sites in, 325s
actin-bound, 2,3-butanedione monoxime and, 1980
actin interaction with, in unsaturated filaments, 35s
in ATPγS and Ca^{2+}, 322s
axial rotation of, in skeletal muscle, 1461
in live frog muscle, 99s
myosin regulatory light chain phosphorylation and, 224s
nucleotide binding site of, filament proteins and, 216s
of skeletal muscle, light chain exchange onto, 363s
in smooth muscle, phosphorylation and, 228s
in solution, conformational changes of, 29s
Myosin molecule, atomic force microscopy of, 1604

N

Nebulin, elastic properties of, 598
Neuron, sympathetic, cytosolic calcium oscillations in, 1752
Neutrophil, cytoskeletal rearrangement and cortical contraction in, 2004
Nicotinic acetylcholine receptor, *See* Acetylcholine receptor, nicotinic
Nicotinic receptor, of muscle, channel changes in, 483
N-methyl-D-aspartate (NMDA) receptors
calcium flux through, 501
of lamprey spinal neurons, 96
pore size of, 866
Node of Ranvier, *N* sodium channel model of, threshold fluctuations in, 779
Nonclaret disjunctional (ncd) protein
directional reversal in, 368s
motor domain of, solution structure of, 59s
Nucleic acids
hydration of, 1639
ultraviolet resonance Raman spectrometer for, 1607
Nucleotide binding, to kinesin family motors, 364s
Nucleotide binding site, of myosin head, protein filament and, 216s
Nucleotide:myosin complexes, structural studies of, 19s

O

Oligocation-DNA oligomer binding, Monte Carlo study of, 634
Optical rotatory dispersion spectroscopy, nanosecond, of hemoglobin CO kinetics, 326
Osmotic pressure, cytochrome P-450_{cam} spin transition and, 2056
Oxygen
from respiratory protein, viscosity and, 665
supply of, to red muscle, 1246

P

Pancreatic islet
burst busters in, 2216
electrical activity of, calcium release-activated current in, 2323
Papillary muscle, myocardial cross-bridge events and, 346s
PBFI, photophysics of, 2469
Peptide
design of, in *Machina,* 434
phosphatidylethanolamine interaction with, 847
Peptide-vesicle binding, light scattering spectroscopy of, 131
Permion, gramicidin sodium as, 906
pH, rapid change in, bacteriorhodopsin and, 1507
Phenylalanine, carboxypeptidase A and, 303
Phenylmaleimide-labeled myosin, muscle fiber and, 343s
Phosphate
inorganic, muscle fiber ATPase and, 350s
low force cross-bridges and, 243
release of, in muscle fiber, time-resolved measurement of, 191s
Phosphatidylcholine, unsaturated, chain order of, 2396
Phosphatidylcholine-diacylglycerol-water, in soybean, phase diagram of, 1856
Phosphatidylcholine/galactosylceramide bilayers, macro-ripple phase in, 1396
Phosphatidylethanolamine, peptide interaction with, 847
Phosphatidylserine
calcium-induced vesicle fusion of, diacylglycerol and, 558
calcium interaction with, neutral lipid dehydration and, 1009
Phospholipase A_2
as mechanosensor, 1888
secretory, ionizing radiation and, 2108
Phospholipid-alcohol systems, interdigitated structure of, 1850
Phospholipid bilayers, *See also* Lipid bilayers
by atomic force microscopy, 171
cholesterol concentration and, 1895
cholesterol distribution in, 1944
electrostatic potential and, 729
fatty acids in, cholesterol in, 179
Langmuir-Blodgett transfer of, 1364
micelle transition in, stages of, 584
polyethylene glycol and
phase behavior and, 1903
phase separation and, 525
steric pressure and, 1921
two-phase permeation of, 2333
Photobleaching
of fluorescein, in microscopy, 2588

fluorescence recovery after, 766, 2145
Photocycle
of bacteriorhodopsin, *See* Bacteriorhodopsin, photocycle of, 2073
of halorhodopsin, 2062
Photodynamic therapy, cell plasma membrane injury by, 2198
Photoinduction, of volume change and energy storage, in yellow protein, 1101
Photolysis, of caged calcium, ryanodine receptor activation by, 946
Photoreceptor, rod, cGMP diffusion coefficient in, 373
Photosynthetic bacteria, purple, excitation dymanics in, 1089
Photosystem II
CP47 antenna complex of, triplet and fluorescing states of, 261
fluorescence induction in, 2474
S_2 state multiline EPR signal of, 2081
***Phycomyces* sporangiophores,** cell wall behavior of, in pressure response, 702
Plasma membrane, permeability of, after thermal injury, 2608
Platelet activation, diamide and, 364
Platelet membrane, SFM and SEM of, 671
Polydimethylsiloxane, myoglobin adsorbed on, conformational alteration of, 2091
Polyethylene glycol
phospholipid bilayer steric pressure and, 1921
phospholipid phase behavior and, 1903
phospholipid phase separation and, 525
Polyions, rigid, electrophoresis of, 2261
Polymer end, motion of, in homopolymer and heteropolymer collapse, 1694
Polymer-induced toroids, of hexagonal DNA, 54
Polysaccharide acetan, bacterial, helical structure of, atomic force microscopy of, 360
Polysaccharide helices, in atomic force microscope, 3, 360
POPC (1-palmitoyl-2-oleoyl-*sn*-glycero-3-phosphocholine), membrane of, hydration and structure of, 1960
Porosity, bacterial migration and, 800
Porphyrin
total internal reflection fluorescence on, 2573
triplet state, EPR, 2505
Potassium channel
accessible side chains in, 900
activity and suppression of, 147
ionic and gating currents in, 491
Shaker
H5 pore region, interactions of, 448
inactivating peptide of, conformation of, 858
inactivation in, 89
voltage-gated, aspartate in, 1804
Preferential interactions, 727
two-domain model of, 786
Prodan, membrane solubility of, ethanol-induced lipid interdigitation and, 567
Profilin:actin crystals, structural transitions of, 12s
Proline ring, puckering motions of, 1540
Protein
conduction of, in F0 complex of ATP synthase, 104
crystals of, x-ray diffraction of, 312
diffusion and partitioning of, in charged agarose gel, 1561
dynamics of, self-similar, 46
electrophoretic mobility of, 1120
filament, myosin head nucleotide binding site and, 216s
fluorescence decay of, discrete versus distributed lifetimes of, 1145
helicase-primed, nucleotide binding studies of, 186s
hydrodynamics of, fluorophores for, 342
kinesin, motor polarity in, 271s
membrane
cell motility and, 214s
hydrodynamic interactions and, 1828, 1836
rotational mobility of, glycophorin A antibodies and, 1881
motor
of DNA, energy coupling by, 180s
gliding assays for, 366s
movement of, recordings of, 230s
of muscle, mechanical properties of, 75s
polarity of, in kinesin, 271s
peripheral, binding of, to lipid membrane, 536
photoactive yellow
binding of, to lipid bilayers, 648
volume change and energy storage in, 1101
respiratory, oxygen escape from, viscosity dependence of, 665
sequence randomness of, structure and, 1531
surface binding of, transport and, 2251
thermal hysteresis, stabilization of supercooled fluids by, 2098
ultraviolet resonance Raman spectrometer for, 1607
Proton
motor, sliding movement by, fluctuation analysis in, 68s
release of, in bacteriorhodopsin photocycle, 1518
Psoas muscle fiber
cross-bridge kinetics in, 360s
mechanical studies of, 361s
N-phenylmaleimide-labeled myosin and, 343s
tension transients in, calcium activation and, 339s
tetramethylrhodamine isomers at, fluorescence polarization from, 78s
Purinergic junctions, quantal transmission at, 925

Q

Quantal transmission, at purinergic junctions, 925
Quantitative reflection interference contrast microscopy, for cell-substrate interactions, 1177

R

Radiation, ionizing, secretory phospholipase A_2 and, 2108
Raman spectroscopy
of proteins and nucleic acids, 1607
polarized, of DNA, 1073
Random walk calculations, for bacterial migration, in porous media, 800
Ranvier, node of, *N* sodium channel model of, threshold fluctuations in, 779
Reaction center, electrostatic calculations in, 2233
Red cell, *See also* Erythrocyte
deformation and flow of, in lattice, 2224
Red cell-perfused heart, sarcoplasmic oxygenation in, 2129
Redox
linkage of, thermodynamics of, 2543
malate dehydrogenase sensitive to, 2218
Rep helicase, adenine nucleotide binding to, 340s
Resonance light scattering spectroscopy, of chlorophyll *a*, 335
Respiratory protein, oxygen escape from, viscosity dependence of, 665
Retinal hydrogen bonding, with water, 25
RH421 probe, voltage sensitivity of, 1406
***Rhodobacter sphaeroides*,** reaction center of, volume contraction in, 275
Rhodopsin, structure of, electron microscopy of, 1776
Rod photoreceptor, cGMP diffusion coefficient in, 373
Rotational dynamics, actin modification and, 341s
Ryanodine receptors
activation of, by flash photolysis of caged calcium, 946
helothermine blockade of, 2280
in skeletal muscle, 471, 893

S

***Salmonella typhimurium*, spatio-temporal patterns generated by, 2181**
Salt-induced toroids, of hexagonal DNA, 54
α-Sarcin peptide, vesicle destabilization by, 2387
Sarcomere, length of, oscillations in, 2429
Sarcoplasmic oxygenation, in red cell-perfused heart, 2129
Sarcoplasmic reticulum
  cardiac
    calcium release from, 111, 2015
    halothane and lidocaine effects on, 936
  of atrial tumor, molecular dynamics of, 1787
Scaled particle theory, thermodynamic hemoglobin solution analysis using, 835
Scanning force microscopy, of membrane patches, 1687
Sealing measures, cable properties and, 795
Seven-helix bundles, molecular dynamics of, 1295
***Shaker* potassium channel**
  H5 pore region of, interactions of, 448
  inactivating peptide of, conformation of, 858
  inactivation in, 89
Signal transduction, in muscle contraction, 336s
Skeletal muscle
  ATP analog-labeled myosin in, 331s
  ATPase in, inorganic phosphate and, 350s
  calcium release from, luminal calcium and, 507
  contracting, low force cross-bridges in, phosphate and, 243
  molecular equilibration and exchange in, 371s
  myosin head of
    axial rotation of, 1461
    light chain exchange onto, 363s
  myosin-induced thin filament activation in, 1430
  myosin light chain of, 120s
    force generation and, 345s
  ryanodine receptor in, 471, 893
  tension generation in, and divalent cation binding to myosin regulatory light chain, 1443
  tension transients in, 218s
  twitch in, x-ray diffraction in, 227
Skeletal muscle fiber, fluorescence polarization at, 81s
Skeletal myofibrils, nebulin in, elastic properties of, 598
Skin, human, electroinduced transport through, 749
Sodium
  accumulation of, near oligomeric DNA, 1063
  in gramicidin, as permion, 906
Sodium channel
  batrachotoxin-activated, trimethyloxonium and, 1337
  myocardial, multimodal action of, 121
  N, node of Ranvier model by, threshold fluctuations in, 779
  voltage-gated, pore mutation in, 1814
Sperm, of *Limulus,* acrosomal filament of, 8s
Spinal neurons, NMDA receptors in, 96
Spin exchanging systems, heterogeneous, 2556
Stark effect spectroscopy, of tryptophan, 1583
Stratum corneum, large unilamellar vesicle model system in, 196
Striation spacing, oscillations in, 2429
Striatum, dopamine diffusion and Michaelis-Menten uptake in, after iontophoresis, 1699
Sugar, repuckering of, in DNA duplex, 13
Sulfhydryl reactivity, in actin, 367s
Supercoiling free energy, of DNA, 619
Superoxide dismutase, quasielastic neutron scattering on, 2519
Surfactin, membrane interaction with, 1937

T

T cell, activation of, CD2-mediated, 459
TCR/CD3-juxtaposed inhibitory state, CD4 in, 1170
Temperature, phospholipid phase separation and, 525
Temperature dependence, of calcium wave properties, 40
TEMPO, partitioning and molecular dynamics of, 2350
Tension, passive, in striated muscle, myofibrils and, 329
Tension transient
  after step stretch, 370s
  calcium activation and, 339s
  force generation and, in muscle fiber, 2032
  in skeletal muscle, 218t
Tetramethylrhodamine, fluorescence polarization from, in psoas muscle fiber, 78s
Thapsigargin, calcium pump aggregated by, 208
Thermal hysteresis proteins, stabilization of supercooled fluids by, 2098
Thermal injury, plasma membrane hyperpermeability and, 2608
Tissue, fluorescence lifetime-based sensing in, 1574
Titin, cardiac muscle passive tension and, 1027
Tobacco mosaic virus, two-dimensional exchange ^{31}P NMR spectroscopy of, 1128
Toroids, of hexagonal DNA, 54
Torque, generation of, by flagellar rotary motor, 163s
Total internal reflection fluorescence, orientation distribution of, 2566, 2573
Transmitter binding, geometric and many-particle aspects of, 815
Trimethyloxonium, batrachotoxin-activated sodium channels and, 1337
Tropomyosin
  on actin, thin filament of, 347s, 353s
  actomyosin interaction and, 2s
Tryptophan
  of gramicidin, formamidinium-induced channel stabilization and, 2271
  Stark effect spectroscopy of, 1583
Tumor, atrial, sarcoplasmic reticulum of, molecular dynamics of, 1787
Twitch, x-ray diffraction in, 227

U

Unilamellar vesicles, large, in stratum corneum, 196

V

Vanadate, muscle force inhibition by, 216
Ventricular myocytes, sarcoplasmic reticulum of, calcium release from, 2015
Vesicle, destabilization of, by α-sarcin peptide, 2387
Vibrational circular dichroism, of dinucleotides, 1045
Viscosity, respiratory protein oxygen release and, 665
Voltage dependence, of outer hair cell motility, 2190
Voltage-dependent anion-selective channel-less yeast mitochondria, multiple conductance channel activity of, 2299
Voltage-gated potassium channel, aspartate in, 1804
Voltage-gated sodium channel, pore mutation in, 1814
Voltage sensitivity, of RH421 probe, 1406

W

Water permeation, of lipid bilayers, 997

X

X-ray diffraction
  of protein crystal, 312
  in twitch, 227

Y

Yeast mitochondria, multiple conductance channel activity of, 2299